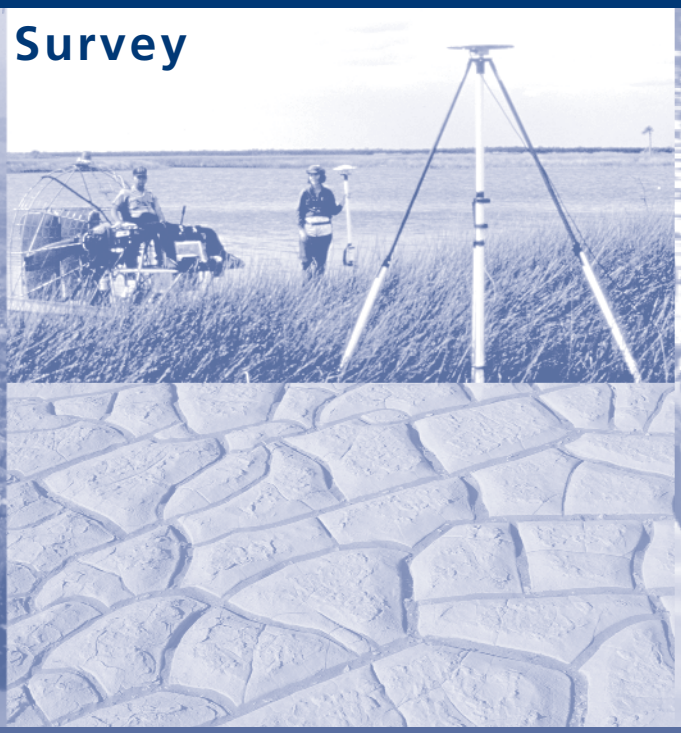
FY 2003 Annual Performance Plan

FY 2001 Annual Performance Report

U.S. Geological Survey



DEPARTMENT OF THE INTERIOR

USGS
science for a changing world

U.S. Geological Survey

Annual Performance Plan FY 2003

Annual Performance Report FY 2001

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

I am pleased to present our consolidated performance report and plans for the U.S. Geological Survey (USGS) for FY 2001-2003. Capitalizing on our experience and accomplishments in FY 2001, we have developed annual performance plans that will continue to advance us toward achieving our revised strategic plan for FY 2000 – 2005.

Our plans build on our proud 123-year history of impartial scientific excellence. They reflect a renewed commitment to meeting the needs of our partners and customers and to delivering relevant and usable science at the right time to make a difference. The February 28, 2001, earthquake near Seattle, energy shortages in the West and Northeast, drought in the Southeast -- all these issues remind us of the central role that natural science information plays in understanding and prospering in today's world.

The recommendation of an evaluation by the National Research Council (NRC) on the future roles and opportunities for the USGS, confirms my conviction that there will be an even greater demand in the coming years for integrated natural science information. That information must also be easily accessible to the many agencies at all levels of government, as well as the academic community and the private sector, who rely on the USGS for water, biologic, energy, mineral, geologic, and geographic information to get their jobs done. The skyrocketing costs of natural disasters can only be reduced when people have sound science-based information to make appropriate decisions about life, safety, and economic stability.

Another point from the NRC study is that the USGS needs to do even more in reaching out and being responsive to our partners and customers. While we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We must, and will, do more.

We look forward to finding more avenues and approaches to communicate, consult, and cooperate with our partners to ensure that our science is citizen centered and relevant. We are committed to the President's and Secretary's Management Reform Initiatives and look forward to working together to achieve streamlined business practices, enhanced regional leadership, insightful collaboration among disciplines, and an evolving culture of accountability. These are the foundation of our efforts to ensure that we can provide the science solutions that our society needs to thrive and prosper.

Charles Groat, Director

USGS Commitment

The employees of the USGS support the goals and objectives of the Government Performance and Results Act (GPRA), and are committed to transforming USGS into a responsive and performance oriented agency. In accordance with GPRA, this Annual Plan has been prepared to advance the long-term goals of our revised Strategic Plan. We, the undersigned members of the USGS Executive Leadership Team, are responsible for successful implementation of our Strategic and Annual Plans:

Dr. Charles Groat
Director

Kathryn Clement
Deputy Director

Amy Holley
Senior Advisor to the Director

Carla Burzyk, Chief
Office of Budget

Carl Shapiro, Acting Chief
Strategic Planning and Analysis

Barbara Wainman, Chief
Office of Communications

Dennis Fenn
Associate Director for Biology

Robert Hirsch
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P. Patrick Leahy
Associate Director for Geology

Barbara J. Ryan
Associate Director for Geography

John D. Buffington
Western Regional Director

Bonnie McGregor
Eastern Regional Director

Thomas Casadevall
Central Regional Director

Carol Aten, Chief
Administrative Policy and Services

Karen Siderelis
Geographic Information Officer

Stan Ponce, Senior Advisor for
Interagency Programs

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Executive Summary

The USGS delivers reliable and impartial information that describes the Earth, its natural processes, and its natural species. Since joining the USGS in November 1998, Director Charles Groat has emphasized that integrating science is the key to its relevance. As we seek to more completely integrate the research of our various disciplines, we will strive to respect the expertise from each discipline and present a balanced view of the issues involved. High quality, objective, credible research and information are our most important products. Honesty and integrity in all aspects of our scientific enterprise, maintaining our impartiality, and ensuring that our information and products are used to benefit the public as a whole will continue to be hallmarks of USGS science.

A Strategic Change team, co-chaired by the Director, defined the actions needed to make USGS streamlined, stronger and more flexible, providing the framework for us to reach the long-term goals we have outlined in our revised Strategic Plan for FY 2000 through 2005 as well as strategically positioning the USGS for response to the Administration's management reform agenda for **strategic management of human capital**. Since January 2000, the Director has been implementing those actions, restructuring the bureau, and redefining business practices. He has established a regional management structure that improves our ability to provide **citizen-centered** service and facilitates an integrated science approach to national earth and biological science problems. The USGS has convened a Workforce Balance Team to provide a bureau focus to issues relating to workforce balance as well as to the statutory and administrative requirements concerning **competitive sourcing and the Federal Activities Inventory Reform (FAIR) Act Inventory** accuracy. This Team coordinates its effort with the Workforce Planning Team to ensure a direct and focused contribution to the overall workforce planning effort.

The year 2001 has been a successful transition year, consolidating administrative functions, implementing common business practices, and training people for full implementation of a single, comprehensive science planning, performance measurement, and financial system in 2003. These changes ensure that the USGS continues to be a world leader in the natural sciences by providing both the discipline-based and integrated science on which people have come to depend. Further, they enhance our tradition of excellence by increasing our ability to work on large regional natural resource problems and more effectively draw on the full breadth of scientific capability available within the USGS.

Critical to monitoring our progress in achieving our strategic direction are the annual performance targets and measures presented in this annual plan. In their new roles, Regional and Associate Directors are ensuring that performance metrics are collected, evaluated, and achieved at appropriate levels in the bureau and that performance data are verified and measures validated. In addition, the Deputy Director convened a Performance Measure Strategic Review Panel in August 2001 with a charge that included recommendations on the next generation metrics focusing on outcomes.

USGS has two performance goals: **Hazards** and **Environment and Natural Resources** with twelve associated performance measures and customer satisfaction metrics. At the end of fiscal year 2001, USGS had met or exceeded eight performance targets and failed to meet four. The unmet **Hazards** goal target (stream-gages) was planned to be recovered in the middle of FY 2002. The count for two other unmet targets, stakeholder meetings in **Hazards** and systematic analyses in **Environment and Natural Resources**, resulted from combining some of the meetings and reports, causing a lower count, but is not a critical failure. For the customer satisfaction metrics, baseline data were collected

beginning in FY 2000 and continuing through FY 2001. More than 1,000 customers, mostly scientists, described their satisfaction with various aspects of USGS science products. Product attrition and lower than anticipated response rates for the survey of Hazard products led us to defer achievement of a baseline for Hazards. A baseline index of satisfaction with USGS Environment and Natural Resources products of 95 percent was defined in FY 2001. For FY 2002, we will attempt to expand the hazards survey to derive an independent metric. In addition, we will convert the customer satisfaction survey effort into an ongoing activity running roughly 2-3 science product surveys each quarter.

For FY 2003, the baseline targets for each budget activity and the incremental targets associated with requested program changes are cataloged and presented in tabular form in the President's Budget to facilitate **integration of performance with budget decisions**. In addition to our ongoing science and information activities, USGS proposes several new initiatives for FY 2003. Development of an Enterprise GIS directly supports the President's management goal of expanding electronic government, making it easier for citizens to access and use the USGS' vast spatial data holdings. Both our energy resource and Alaska data initiatives support the President's National Energy Policy and the Administration's commitment to a secure energy supply while protecting the environment by providing a solid scientific basis for decisionmaking. The USGS also proposes to increase science support in the Everglades in consultation with the National Park Service (NPS) to address both the immediate research needs of the NPS and the long-term goals of the Comprehensive Everglades Restoration Plan. USGS will expand our contribution to the resolution of U.S. Mexico Border Environmental Health issues through collaboration with the National Institute of Environmental Health Services on the severe and complex issues, particularly those that relate to environmental changes resulting from the rapid growth taking place in the area. Performance targets will also be significantly reduced by several funding decreases such as those proposed for streamgages, elimination of the Water Resources Research Institutes program and transfer of the Toxic Substance Hydrology research program funding to National Science Foundation to operate as a grants program.

Quality science that is both relevant and effectively communicated is our most important product. We will continue to measure its quality and relevance through peer reviews and program evaluations such as the review of USGS' Future Roles and Opportunities conducted by the National Research Council (NRC). We believe that our leadership and our plan are helping us meet the challenges of the new century and that the NRC review validates our purpose and mission. Our systematic survey of customer satisfaction with our products and services renews our commitment to accountability.

Mission Goal	Goal	FY 2001 Performance Targets and Results
Hazards Environment and Natural Resources	2 Annual Goals	8 Targets were met 4 Targets were not met

About This Document

The Government Performance and Results Act (GPRA) requires agencies to submit annual performance plans to Congress with their fiscal year budget request and to prepare an annual performance report at the end of each fiscal year on how well they met their goals.

In this document USGS combines the FY 2001 Annual Performance Report (APR) with the FY 2003 Annual Performance Plan (APP) rather than preparing a separate FY 2001 Report. We believe this consolidated APP/APR will be more useful to Congress and the appropriations process than submitting separate documents at separate times. In this consolidated document we present the status of what we have accomplished in FY 2001, a summary of what we plan to accomplish in the current fiscal year—FY 2002 (Appendix 2), and what we propose to accomplish in FY 2003 with the budget resources we are requesting. In a single presentation, the reader can see the trends in our performance targets along with the trends in our results.

About Our Performance Goals, Measures, And Targets

The performance goals, measures and FY 2003 targets presented in this combined FY 2003 Annual Performance Plan and FY 2001 Annual Performance Report are based on the U.S. Geological Survey Strategic Plan for FY 2000 – FY 2005. At the time this APP/APR was published (February 2002) the Department of the Interior (DOI) was in the process of revising its strategic plan. The primary impact of the revised DOI Strategic Plan will be on APPs developed for FY 2004 and beyond. However, we will review the performance goals, measures and targets presented in this APP/APR and last year's APP/APR for consistency with the revised DOI Strategic Plan. As a result of that review, we may find it necessary or appropriate to modify portions of our FY 2002 or FY 2003 APPs. Any APP changes will be documented according to the provisions of the Office of Management and Budget Circular A-11.

Section I

Introduction and Overview

1.1 INTRODUCTION

What we do

The USGS delivers reliable and impartial information that describes the Earth, its natural processes, and its natural species. Emergency response organizations, resource managers, planners, and other customers use this information to: minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The USGS is at work in every State in the Nation, cooperating with more than 2,000 organizations to provide information for resource managers in the public and private sectors. Our strengths, which rely on our reputation for objectivity and scientific excellence, as well as a strong heritage of collegial relationships and partnerships with the customers we serve, include a multidisciplinary workforce; the ability to develop, design, and maintain long-term national and global databases; and the capability to conduct long-term, broad-scale, multidisciplinary, and interpretive natural science studies.

SCIENCE, PERFORMANCE MEASUREMENT, AND GPRA

USGS primary science disciplines include the following:

- Biological resources (information critical to biological species management, animal health, ecosystems, and invasive species);

- Geology (information relating to energy and mineral resources; natural hazards such as landslides, volcanoes, coastal erosion, and earthquakes; and geologic processes that affect our Nation's land and coasts);

- Geography (geospatial data, topographic maps, and satellite images); and

- Water resources (real-time flood data and information on the quality and quantity of surface- and ground-water resources).

The USGS' primary product is scientific information. Quantitative measures of our productivity are tangible and directly related to inputs, but they are primarily outputs (e.g., number of scientific papers published, data collected,...) that convey little sense of the true benefits gained by the American people from the information we produce. The outcome related to our providing scientific information is that a stakeholder has the information (land manager's, or emergency response teams' inputs) with which to make an informed decision. Quantitative impact measures (e.g., the acreage of ecosystems restored by a land manager, or lives saved) are only indirectly linked to USGS outcomes.

> **"SCIENCE TELLS WHAT CAN BE DONE, NOT WHAT SHOULD BE DONE."**
>
> John Marburger
> Director,
> Office of Science and Technology Policy
> January 17, 2002

The results of research are not predetermined — by definition science is objective, impartial, and credible. But science is often not the only factor that is germane to the decision on management strategy. The scientific information we produce provides alternatives and predicts their outcome, but no matter how "good" the science may be, it in itself cannot achieve the desired outcome. It remains for the user of the scientific information who does or does not make a science-based decision to determine how useful the information was in making the decision, to measure the outcome achieved by the decision, and ultimately acknowledge the utility of the science in achieving the desired outcome.
If the science we provide is not used because it was not useful or timely, we can and should be held

accountable. That is why our research will continue to be internally and externally peer reviewed, our customers and stakeholders surveyed, and our programs cyclically evaluated to ensure the quality and timeliness of our science. That is also why our strategic and annual performance targets focus on **provision** of that science to customers for solving the Nation's complex land and resource management problems and to minimize the loss of life and property from natural disasters.
This approach is validated in the recommendations of the National Academy of Science report *Evaluating Federal Research Programs: Research and the Government Performance and Results Act* that was released February 17, 1999. The Academy report endorses a three-pronged "expert review" of Federal science, to **validate quality, relevance, and leadership**. This approach was confirmed as the most effective technique for evaluating research programs in the National Academy of Science report *Implementing the Government Performance and Results Act* for Research released July 2001. USGS engages in reviews and evaluations that meet these accountability criteria for the research we produce.

• Internal and external peer review has been the **quality** standard for USGS scientific publications and a documented component of USGS policy throughout our history.

• To ensure the **relevance** of our products to customers' needs, USGS collects information from customers by survey, as described in the Customer Service section 3.1, and by periodic review of our programs with stakeholders, including user forums to which the public is invited. Further, a Department-wide process is being implemented to ensure that the highest priority science needs of the Department are being met by USGS programs — again ensuring the relevance of USGS science to support the Department's land and resource management policy and decisionmaking.

• **Leadership** issues are addressed in formal, external, independent program evaluations such as:

– the National Research Council's review of the Biological Resource Status and Trends in the Biological Resources Discipline, released in 2001, and

– the National Research Council's review of "Future Roles and Opportunities for the U.S. Geological Survey" released in 2001.

Our approach to GPRA is also consistent with the September 1998 report by the House Science Committee Toward a New Science Policy that states " ...in general, R&D in Federal agencies should be highly relevant to, and tightly focused on, agency or department missions." This relevance and focus is demonstrated in section 1.3, Linkage to DOI, Goals and further discussed in section 3.2, Crosscutting Issues.

STRATEGIC CHANGE

USGS implemented a number of strategic changes in 2001 that focus on instituting matrix management and better enabling integrated science. This new management structure that incorporates regional line management and national science direction has enabled us to better understand our customers and their needs, and has allowed us to better invest in and reward our people. Important science planning changes that we have accomplished to date include creating bureau-wide Future Science Directions and implementing bureau-wide science and initiative planning processes. The Future Science Directions encompass eight major topical areas and issues that provide a framework for our science to better meet society's needs, and within which the USGS can build the science that will move us forward. These topical areas are:

- Coastal Environments
- Earthquake Hazards
- Ecosystem Health, Sustainability, and Land Surface Change
- Energy
- Environmental Information Science
- Ground-Water Resources
- Invasive Species
- Rivers

The Future Science Directions are being used to integrate and focus 2002 and 2003 science planning. Regional workshops on fire science, the Missouri River, and the desert Southwest have helped us frame issues with our customers and partners, and have provided a forum to discuss the latest scientific advances. All these activities are enhancing our ability to integrate the work we do and allowing us to anticipate the changing needs of society, our partners, and our customers.

Common Business Practices: From 2000 through 2003 our highest priority in streamlining USGS functions is to adopt and implement a bureau-wide infrastructure that will facilitate uniform administrative, program development, performance measurement, and information systems across disciplines, regions, and programs. Significant progress has been made in planning a single, web-based, bureau-wide, science planning, performance measurement, and financial system and integrating our other support systems for travel and time management. A Capital Asset Plan for the Budget and Science Information System – Plus (BASIS+) was completed in FY 2001 and full implementation to facilitate bureau-wide planning, documentation, and budgeting is scheduled for FY 2003.

In FY 2001, the USGS established the Office of the Geographic Information Officer (GIO). The GIO serves as the bureau's Chief Information Officer, manages the bureau's Information Technology (IT) investment portfolio, and is responsible for ensuring the bureau meets requirements of the Clinger-Cohen Act of 1996. During FY 2001 and FY 2002, enterprise-level information technology, management, and services (IT/IM/IS) functions are being consolidated by realigning functions and positions that are now distributed among several different offices. Realignment of regional-level IT/IM/IS functions will be completed during FY 2003. This realignment will enhance the bureau's ability to conduct full life-cycle planning and management of enterprise-wide information capabilities and services, increase emphasis on enterprise-wide information technology architectures, and increase emphasis on management of USGS data and information holdings as corporate assets.

The USGS has engaged a private industry consultant to assist us in determining an IT "Total Cost of Ownership" (TCO) for the bureau. This study will allow us to establish a more accurate baseline of our annual IT expenditures across the bureau and to identify specific steps we can take to improve return on IT investment. The results of the TCO study will also provide key operational and investment information that will be used to document the current USGS information architecture and lay out a bureau-wide IT investment strategy that ensures the architecture evolves based on the needs of the USGS science programs.

USGS has implemented procedures to achieve the Administration's target to competitively source 5 percent of commercial activities and to ensure the accuracy of the annual FAIR Act inventory. Finally, during fiscal year 2001, we developed new bureau-wide policies regarding the identification and distribution of indirect (overhead) costs. We also developed a plan to implement the new policies, and related policies regarding subjects such as time and attendance and cost recovery, by the end of FY 2004.

Leadership: In FY 2000, we began implementing a matrix management approach that balances our need for national oversight and science directions with regional responsiveness to customers and local line management of USGS staff. The science leaders of the bureau are the Associate Directors for Biology, Geography, Geology, and Water. Regional Directors in the Eastern, Central, and Western Regions of the country have line management authority for our discipline-based Regional Executives and authority over regional science programs. The Geographic Information Officer and Administrative Policy and Services Chief ensure development of supporting strategies for information infrastructure and administrative support for the science programs. In FY 2001 a consultant was hired to assess the readiness of the organization to fully implement matrix management, and actions are being taken to build commitment and hasten implementation.

Regional Directors and Associate Directors are working collaboratively to ensure a balanced and focused perspective on the science we produce. One thing that

will contribute to our excellence as a science leader is to change the way we secure and maintain the scientific and administrative talents and skills we need now and in the future. In 10 years, 50 percent of our current workforce will be eligible for retirement. Our Workforce Planning Group, with the involvement of scientists, is developing a plan that will help ensure a top-notch workforce, at all times, ready to meet whatever challenges we may face.

Program Planning: Our future science directions guided the development of our FY 2003 initiatives focused on an integrated scientific approach to addressing high priority societal needs. For our science to be truly integrated, we must plan our science programs and the budget that supports them, using an interdisciplinary approach. This means making our programs truly bureau, rather than discipline programs, with their elements and funds managed at the appropriate local, regional, or national levels. We are actively shaping our program, budget, and operating plan development to implement this approach in FY 2002. Bureau Program Coordinators and Regional Executives collaboratively addressed program goals, shared goals, priorities, tools, expertise, partnerships opportunities, and short-term and long-term actions to be taken. The common denominators were the need for multi-program involvement, use of a systems approach in sustainability of competing interests, balance between geographic area emphasis and long-term data and monitoring, and the need for tools such as high speed computing, remote sensing, models, etc. Ultimately, a new bureau-wide system will facilitate the integration and coordination of all of our science activities by providing the needed tools to have instant access to all science activities in the Bureau and providing information for meeting performance goals of our strategic plan.

Customers: The Bureau's Strategic Plan continues to place a high priority on meeting our customers' needs. Each Associate Director is actively engaging customers and partners at the national level. Regional Directors are meeting with local and regional customers and ensuring that their needs are being met and integrated into the Federal effort as a whole. In addition to our customer-listening sessions, cyber seminars, science workshops, budget briefings, and other customer feedback forums, a team representing major parts of the Bureau was established in 2001 to introduce a common method of managing customer information. Introduction is expected to be completed in 2002, after which the team will continue to facilitate communication and information exchange among the programs about customer information collection and management.

Customer Satisfaction Surveys: The USGS has begun to collect customer satisfaction data on a quarterly basis using the mini-survey methodology developed in the 2000-2001 initial collection. Each quarter, surveys will be conducted on various science products developed by the Bureau's science programs. In addition, the USGS is analyzing feedback collected during FY 2000 and FY 2001 from users of a wide variety of its science products. Initial customer satisfaction/outcome surveys have been completed for over 30 distinct USGS science products. More than 1,000 customers, mostly scientists, are describing their satisfaction with various aspects of USGS science products. For the first time the USGS has a consistent user assessment of science products across the majority of its programs. The survey results are helping us design enhancements of specific products by improving our understanding of the USGS customer base and allowing cross-program comparisons. These surveys are also a baseline measurement of the overall success of USGS science in meeting the needs of scientific users and are helping establish a metric target for the future.

People: The USGS has implemented a Leadership Program to foster visionary leadership and management professionalism. We are further creating a leadership-centered culture throughout the USGS that emphasizes the importance of people in ensuring high quality science for the benefit of society and ensuring that our employees have the scientific and technical skills to maintain our scientific excellence. In line with this philosophy the USGS is moving beyond rewards to creating a rewarding environment that is equitable, consistent, and aligned with our strategic direction, vision, and goals to help attract, recruit, and retain staff. The USGS held a Rewards Summit at which a handbook was developed and plans established for

training and communication. Guidelines include the responsibility of managers for creating a rewarding environment, budgeting for rewards, and modeling expected behaviors.

MANAGEMENT REFORM

Strategic Management of Human Capital

The USGS will conduct a comprehensive assessment of our organizational and position structures to ensure efficiency and effectiveness and to direct any savings resulting from this assessment to science. Specifically, this assessment will be conducted to correct workforce imbalances; reduce managerial layers, improve customer service, obtain a better ratio of supervisors/ managers to employees; eliminate certain 'deputy', 'associate', 'assistant', and similar positions; collocate and consolidate administrative functions; collocate and integrate scientific functions; and eliminate or reduce low priority functions. Linkage will be made to on-going efforts in FAIR Inventory, workforce balance, workforce planning, future science directions, strategic planning, customer satisfaction, and e-Government.

Competitive Sourcing

The USGS performs its scientific and support activities by balancing a combination of USGS Federal employees and external capabilities and staff. As such, we outsource selected aspects of our work and will continue to do so where outsourcing provides access to needed skills, provides a cost effective staffing alternative, and ensures a workforce with a balance of government and non-government staff. As we implement competitive sourcing requirements, we will continue to maintain and depend on the professional excellence of our employees to accomplish our mission.

The FAIR Act of 1998 is designed to ensure that activities defined as commercial in nature are not routinely performed by Federal employees. The USGS FAIR Act Inventory identifies the commercial functions in the bureau subject to the provisions of Circular A-76 that are currently being performed by USGS employees. In FY 2001, a USGS Workforce Balance Team (WBT) has been developing alternatives to address the Administration's near-term (FY 2002 and FY 2003) competitive sourcing requirements as well as a long-term strategy related to competitive sourcing for the bureau. In FY 2002, the WBT will recommend a long-term strategy to help us meet the intent of the FAIR Act while minimizing the impact on our employees and continuing to effectively accomplish our mission.

Under the President's order, by the end of FY 2007, 50 percent of USGS positions defined as commercial (approximately 1,100 positions) must be either directly converted to commercial sources or specific groups and/or functions competed on a cost basis. As an incremental step in that direction, USGS is required to convert or compete approximately 360 positions by the end of FY 2003. We are currently reviewing proposals developed by the WBT to meet the Administration's requirements under the FAIR Act for FY 2002 and FY 2003.

Financial Performance

The USGS continues to work proactively with the Department of the Interior to implement improvements to ensure accountability and compliance with the Chief Financial Officers (CFO) Act and recent changes in the Federal Accounting Standards Advisory Board's accounting standards and concepts. USGS is participating in the Department's Financial Management Systems Migration Project and providing leadership for the budget system team. USGS is establishing common business practices and will improve budget allocation and reporting processes as well as working capital fund reporting. Accounting improvements will include development of an automated general ledger reconciliation, an automated interface to Treasury for billing and collection transactions, improved statistical techniques for sampling of vouchers, and automation of several accounting forms. USGS' participation in these initiatives will improve financial data and processes and provide for more timely and accurate financial reporting.

Budget and Performance Integration

The next generation Strategic Plan, a single Plan for the Department of the Interior, is being developed for the FY 2004 budget process by the Bureaus and Department in consultation with their stakeholders. USGS is an active participant in developing outcome metrics for all goals and is leading the effort for one of the goals. Linking planned performance with budget requests and financial reports is key to using performance data to

manage and evaluate how well the funds were spent. Activity based costing is a tool to facilitate integration of budget and performance management. USGS is participating in the definition and implementation of activity based costing to ensure alignment with USGS full cost accounting.

Expanded Electronic Government

In FY 2001 the USGS engaged a private industry consultant to assist in 1) developing and documenting a Capital Asset Planning and Investment Control process for the bureau, and 2) providing guidance and technical support to managers of key USGS Information Technology (IT) systems in developing well-documented capital asset plans (Exhibit 300's). The bureau has established a Capital Asset Planning and Review Committee that formally reviews all capital asset plans and makes recommendations to the USGS Deputy Director on submission of capital asset plans to DOI.

USGS is an active participant in the accelerated effort to develop the DOI enterprise information architecture. The USGS has also established an integrated bureau-level team that has begun development of the USGS information architecture. The USGS enterprise architecture will build on and support the Department-wide architecture, while also accommodating the unique, bureau-specific business requirements of the USGS.

The USGS is actively participating in three government-wide E-Government initiatives, including Geospatial One-Stop, Recreation One-Stop, and Recruitment One-Stop. The E-Gov Geospatial One-Stop Initiative, led by the interagency Federal Geographic Data Committee (FGDC), will make geospatial data more accessible and usable by developing government-wide data standards and developing a user-friendly web portal for geospatial data and mapping applications. These data will be consolidated into the National Spatial Data Infrastructure (NSDI) Clearinghouse network providing a "one-stop" access to FGDC-compliant geospatial data. Interoperability tools will be utilized to migrate current data to the approved NSDI Framework Data standards. Through its participation in the Geospatial One-Stop Initiative, USGS will lead the development of standards for three data layers: digital orthoimagery, elevation, and hydrography.

1.2 MISSION STATEMENT

Strategic Direction

The USGS will combine and enhance our diverse programs, capabilities, and talents and increase customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.

Vision

The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs.

Mission

The USGS serves the Nation by providing reliable scientific information to:

- describe and understand the Earth;
- minimize loss of life and property from natural disasters;
- manage water, biological, energy, and mineral resources; and
- enhance and protect our quality of life.

1.3 LINKAGE TO BUREAU STRATEGIC PLAN AND DEPARTMENTAL GOALS

The Departmental policy on the use of science to meet goals is stated in 305 Departmental Manual 2: "…science shall be fully integrated and effectively used in the land and resource regulatory and management policies, practices and decisions of the Department and its bureaus." As the science bureau of the Department of the Interior, USGS provides information and technologies that are critical to the mission achievement of Department land and resource management bureaus. USGS mission and long-term goals directly support the Department of the Interior **Goal # 4, "Provide Science for a Changing World,"** but contribute to all of the DOI goals by focusing on the provision of scientific information to support these efforts.

For example, USGS conducts research at a variety of scales from site-specific studies to watershed or regional ecosystem scales to identify biological status and trends, including invasive and threatened/endangered species, determine water quality and quantity, and assess other physical and geochemical parameters of environmental health that directly support DOI **Goal #1, "Protect the Environment and Preserve our Nation's Natural and Cultural Resources."** Some representative current studies include:

• cooperative work with Bureau of Reclamation on water quality and (or) quantity of irrigation drainage into Elephant Butte Dam, NM; Angostura Unit, SD; and San Pedro River, AZ; to provide data for use in restoration of these western reservoirs and downstream waters;

• integrated hydrologic, geologic, and biological studies in the Animas River, CO, and Boulder Basin, MT, watersheds as part of the USGS Abandoned Mine Lands Initiative to guide Bureau of Land Management and others in reclaiming watersheds affected by past mining practices;

• support of a multi-year effort to define land use, aquifer characteristics, recharge to the shallow aquifer system, surface water distribution system, and water use in Albuquerque Basin, in conjunction with Tribes, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, and National Park Service;

• ecosystem studies of Chesapeake Bay, Everglades/South Florida, Platte River, Greater Yellowstone Area, Mojave Desert, and San Francisco Bay/Delta to provide scientific information to Federal and State land managers charged with ecosystem restoration;

• regional Gap Analysis of five southwestern States to create seamless GIS maps of land cover, terrestrial vertebrate species, etc., for Bureau of Land Management and other DOI bureaus; and

• partnership agreement with U.S. Fish and Wildlife Service to provide scientific support addressing priority resource-management issues such as endangered and invasive species, biological effects of fire on selected habitats, shorebird monitoring, regional and refuge bird conservation planning, and other studies.

In addition to these studies, the USGS works cooperatively with the National Park Service through the Natural Resources Preservation Program and with the U.S. Fish and Wildlife Service through the Quick Response program to provide tactical science to meet short-term, time-sensitive science information needs. Examples of unanticipated management issues that require tactical science include: potential new listings for threatened and endangered species, discovery of environmental contamination that requires immediate attention, or onsite expertise to provide specific information for a particular refuge, park, or resource area.

BEATLEY PLOTS AID LONG-TERM STUDIES OF MOJAVE DESERT

USGS released a fact sheet "Monitoring of Ecosystem Dynamics in the Mojave Desert: the Beatley Permanent Plots" in April 2001. The Beatley permanent plots are named for Dr. Janice Beatley who established them on the Nevada test site in 1962 to document the effects of radiation from atmospheric nuclear explosions on Mojave Desert vegetation. With the moratorium on atmospheric testing in 1963, the Beatley plots became ecological study plots useful for understanding ecosystem dynamics over time, especially the dynamics of ecosystem recovery following severe disturbances. USGS scientists now monitor and assess these plots to gather information about disturbance-recovery regimes, climate change, non-native plant invasions, and plant/animal interactions through synthesis of data collected for nearly a half century. DOI and DoD land managers will use this information in other parts of the Mojave Desert to guide recovery efforts.

USGS science also aids DOI's **Goal #2, "Providing Recreation for America"** by providing science and technical assistance to DOI Bureaus in studies such as:

• a recently published survey of opinion leaders and members of the public in the Southwest to assess how they perceive recreation fees on public lands, including information from the Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, and USDA Forest Service;

• cartographic data compiled at the request of several DOI bureaus for use in recreation management; USGS is directed by its Organic Act, to "classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain." Since 1879, the USGS has collected data on resources, and expanded understanding of geologic structures that determine location and abundance of these natural resources that contribute to **Goal #3, "Managing Natural Resources for a Healthy Environment and Strong Economy."** Examples of current activities include:

• Outer Continental Shelf environmental studies to determine long-term effects of oil and gas exploration (MMS);

• mineral resource assessment of the Humboldt River Basin (BLM);

• coal-bed methane resource evaluation (BLM); and

• investigation of impact of oil and gas operations on the Osage Reservation (also supports Goal #5).

USGS supports **Goal #5, "Meet Our Trust Responsibilities to Indian Tribes and our Commitments to Island Communities,"** through research and partnerships. For example:

• The USGS maintains 170 streamgages in cooperation with BIA and (or) Indian Tribes and also conducts training of Native Americans in streamgage monitoring and water quality measurements;

• The USGS continues to work with the BIA by providing the technical wide-area network (WAN) expertise to link BIA-supported Indian schools to the Internet. More that 70 elementary and secondary schools as well as Tribal colleges have been connected. The USGS is also assisting the BIA to train teachers and other educators to use this system; and

• Research on containment of invasive species is of enormous importance to island communities such as Guam where the USGS is studying the biology of the brown tree snake, control alternatives for this species for use on Guam, the ecology of Guam and other Pacific Islands, and ecosystem changes due to introduced species and habitat alterations occurring in the region.

NEW ENERGY DATA SETS

New energy data sets are available through GEODE (Geo Data Explorer) (http://geode.usgs.gov), which is a unique, map-oriented application that can be brought to the user's desktop via the Internet. New datasets that were made available include USGS world and national oil and gas assessments, international and national coal assessments, and petroleum assessment data for the North Slope of Alaska, including the Arctic National Wildlife Refuge and the National Petroleum Reserve in Alaska. Other data that are available through this Internet portal are selected maps of Federal land ownership, major transportation systems, land-use and digital elevation models, satellite imagery, and biological habitats.

1.4 LINKAGE TO BUDGET

Structure

The GPRA Program Activity concept captures the contribution of all program activities to a common mission requirement by applying a single set of annual goals and performance measures across four budget activities—

– National Mapping Program (restructured in FY 03 Mapping, Remote Sensing, and Geographic Investigations);
– Geologic Hazards, Resources and Processes;
– Water Resources Investigations; and
– Biological Research.

The USGS remaining two budget activities—Science Support and Facilities—support all programmatic activities, and their funding has been distributed on a prorata basis to the two GPRA Program Activities (Hazards; Environment and Natural Resources). These two bureau-wide accounts were created in FY 2000 to improve accountability for all aspects of the organization and promote common business practices while providing a much clearer view of the funding available for science.

Budget activities and subactivities linked to these GPRA Program Activities are identified in **Section II. PAST PERFORMANCE AND FUTURE GOALS**. Performance targets are aggregated as a total for the Bureau for each GPRA Program Activity. Performance targets are disaggregated by budget activity in the budget documents.

Funding Assumptions for Target Development
Long-term goal performance targets assume continued funding at the FY 2000 level. Annual performance for FY 2001 reflects actual achievements. Targets set for FY 2002 reflect the enacted funding level. Because the FY 2002 Appropriation restored many of the decreases proposed in the FY 2002 President's Budget, the targets have been substantially altered for the revised final FY 2002 plan (or operating plan in the Appendix) and therefore for the FY 2003 base. FY 2003 targets reflect proposed programmatic increases and decreases in the President's Budget. Targets also include "completions" funded by prior-year monies because research often requires more than 1 year to deliver a product. Similarly, funding increases in a given year support some long-term efforts, the completion of which will not be achieved until outyears. Therefore, departures of targets from the baseline represent not only the aggregate impact of funding increases and decreases in the given year, but also the completion of long-term efforts from prior-year funding increases or decreases, and/or cyclic studies mandated by Congress.

FY 2003
For FY 2003, the baseline targets for each budget activity and the incremental targets associated with each budget activity are cataloged and presented in tabular form in the Program Change section of the President's Budget to facilitate **integration of performance with budget decisions**. USGS proposes FY 2003 net funding decreases of $5.3 million which include funding increases of $8.7 million for initiatives to support Presidential policies and priorities. Both our Energy resource ($1.7 million) and Alaska data ($1 million) initiatives support the National Energy Policy by providing a solid scientific basis for decisionmaking. The USGS proposes to increase ($4 million) science support in the Everglades in consultation with the National Park Service to address both the immediate research needs of the NPS and the long-term goals of the Comprehensive Everglades Restoration Plan. In response to Presidential priorities, USGS would like to expand our good neighbor policy to Mexico and is requesting increased funding ($1 million) to collaborate with the National Institute of Environmental Health Services on the severe and complex environmental health issues in the U.S.-Mexico Border region. Development of an Enterprise GIS ($1 million) for the USGS directly supports the President's management goal of expanding electronic government, making it easier for citizens to access and use the USGS' vast spatial data holdings. Performance targets will also be significantly affected by funding decreases totaling $67.6 million, including those proposed for streamgages, elimination of the Water Resources Research Institutes program and transfer of the Toxic Substance Hydrology research program funding to NSF to operate as a grants program.

1.5 ADJUSTMENTS TO STRATEGIC PLAN

A revised Strategic Plan for FY 2000-2005 was published in September 2000 and provides the basis for the current FY 2002 and 2003 Annual Plans. For FY 2002, adjustments were made in response to comments and program evaluations, including a new customer satisfaction measure and revised performance measurement for real-time hazards. No changes are proposed for FY 03 at this time. The Department of the Interior has begun development of a single Strategic Plan for the Department for submission in FY 2002 for the FY 2004 process.

1.6 DATA VALIDATION AND VERIFICATION

Source and procedures for collecting and verifying performance data are highlighted in Section II for each performance measure for each GPRA program activity. In general, coordinators for each discipline collected and verified performance data from program/project managers for the budget line items within their purview. Data received a final verification at the bureau level to ensure that reported components were discrete entities and that double counting did not occur, particularly in the more vulnerable areas such as integrated science investigations, for which several

different line items supporting a single investigation could have resulted in counting by more than one program manager. USGS has not identified any serious data limitations—performance data for most of FY 2001 measures were captured by a physical count by in-house sources. Sampling and surveys of customer satisfaction are described in Section 3.1. Data limitations described there were the reason that a Hazards measure was not achieved. A satisfaction metric by goal is planned to be baselined in FY 2002 for implementation in FY 2003. The new streamgage measure requires automated sampling as described under the Hazards Data Verification and Validation section.

In FY 2001 USGS participated in a Departmental pilot of a draft Data Validation and Verification (V+V) Assessment Matrix on our customer satisfaction metric. USGS has always had a customer service focus and, since 1999, we have published GPRA annual reports that are full of good but not quantifiable anecdotes on ways customers are using our products to make a difference. We collected customer feedback on products, but we had never had a good systematic methodology for obtaining a sense of customer satisfaction with our science across the Bureau. The DOI Planning Office was instrumental in urging us down that path and we made our first bureau-wide attempt in FY 2000. Because this is such a potentially valuable, albeit complex and cutting-edge, approach to measuring and communicating customer information within our scientific programs, we believed it merited V&V review. What we learned from the first suite of customer survey analyses has already been used tactically and strategically to ensure that our research continues to be relevant and timely to meet customer needs. As a result, we also believe the metric to be "timeless" in the sense that we will continue to use this even in the next generation of performance metrics that we evolve. The results of the assessment demonstrated that the level of data controls, degree of documentation, and accountability procedures in place to both validate and analyze customer data substantiate the integrity of the performance data and utility of the defined outcome. The USGS will continue to build upon current measures for each of the long-term goals. The USGS has begun a process to improve current measures and develop next generation measures. In FY 2001 the responsible Executive Leadership Team (ELT) official for each long-term goal worked with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans outline specific directions that will be taken in measurement development and identify levels of accountability within USGS. A panel was convened to perform a strategic review of all performance action plans and has developed recommendations for developing the next generation metrics. These recommendations were presented to the ELT for review and approval. Before measures are developed and approved, consideration will be given to the type of decisions that they will support. If measures do not support specific decisions, and are not useful, data will not be collected, compiled, or analyzed. The USGS will collect and use performance data to guide and support strategic decisions.

An ELT official is accountable for each of the long-term goals. In some cases, more than one ELT official will be accountable for achievement of a long-term goal particularly when it is appropriate to separate regional or disciplinary components. The current matrix of accountable ELT officials will be reviewed and revised as appropriate to be consistent with the reorganization.

Accountability will flow from these ELT officials to various levels within the organization. Thus, accountability for achievement of each long-term goal will begin at the ELT level, but will become institutionalized throughout the organization. Accountability will flow to lowest level within the organization that can control outcomes associated with a long-term goal.

Using performance measures in a strategic decision framework requires dialog within the USGS community. The USGS will measure achievement of key science outcomes by convening panels of external scientists and customers to evaluate our performance. To support these panels, the USGS needs to define the key outcomes and to develop criteria to be used in evaluating different levels of success.

1.7 U.S. Geological Survey FY 2003 Goals-At-a-Glance

USGS GPRA Program Activity	Long-Term Goal	Annual Goal for FY 2003
Hazards Provide science in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.	Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.	Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the quarterly average number of streamgages (5,441) delivering real-time data on the Internet, and increasing by 50 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.
Environment and Natural Resources Provide science for a changing world in response to present and anticipated needs to expand our understanding of environment and natural resource issues on regional, National, and global scales and enhance predictive/ forecast modeling capabilities.	Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.	Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 46 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 957 new systematic analyses and investigations to our customers; improving and developing 8 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 153 external grants and contracts.

* For Discussion of Customer Satisfaction Measures, see Section 3.1

Performance Measure	2002	2003	2005
Hazards monitoring networks maintained	6	6	6
Risk assessments delivered	17	14	9
Real-time streamgages on the Internet (quarterly avg.)	5,574	5,441	5,500
Real-time earthquake sensors (cumulative)	449	499	700
Stakeholder meetings	23	28	32
Customer satisfaction *	Baseline goal index	Measure goal Index	90%
Long-term data collection & data management efforts maintained and improved, and large data infrastructures supported	47	48	46
New systematic analyses and investigations delivered to customers	1,008	957	N/A
Decision support systems or predictive models developed or improved and delivered to customers	7	8	20
University-based partnerships for natural systems analysis	209	153	N/A
Stakeholder meetings	529	481	N/A
Customer satisfaction*	90%	90%	90%

Section II

Past Performance and Future Goals

GUIDE TO READING THIS SECTION

The U.S. Geological Survey Plan has two mission goals:
- Hazards, and
- Environment and Natural Resources.

Each mission goal or GPRA Program Activity has one associated long-term goal that has one associated annual goal. The annual performance increment necessary to achieve the long-term goal, as well as any proposed changes resulting from program and budget initiatives, are summarized in the annual goal. Each annual goal has five numeric performance measures (10 total) and a milestone to index customer satisfaction with key USGS science product categories. Establishing baseline for a single Bureau-wide customer satisfaction index was achieved in FY 2001. In FY 2002 we will establish baseline satisfaction metrics by mission goal and will define improvement targets in the revised final FY 2003 plan.

2.1 GPRA PROGRAM ACTIVITY: HAZARDS

Description

USGS provides science in response to present and anticipated needs, focusing efforts to predict and monitor hazardous events in near-real and real time and to conduct risk assessments to mitigate loss.

Hazards are unpreventable natural events that, by their nature, may expose our Nation's population to the risk of death or injury, and may damage or destroy private property, infrastructure, and agricultural or other developed land. USGS hazards mission activities deal with describing, documenting, and understanding natural hazards and their risks. These activities include long-term monitoring and forecasting, short-term prediction, real-time monitoring, and communication with civil authorities and others during a crisis. Other significant activities are post-event analysis to develop strategies to mitigate the impact of future events, and coordinated risk assessments for regions vulnerable to natural hazards.

The USGS has the primary Federal responsibility for monitoring and issuing warnings for earthquakes, volcanoes, landslides, and geomagnetic (solar) storms. We work closely with the National Weather Service in providing the hydrologic information used to forecast floods; the National Oceanic and Atmospheric Administration in monitoring coastal erosion and tsunamis; and the Interagency Fire Center to support wildland fire management activities. The USGS has unique capabilities for integrating hazards information with a wealth of other geospatial data and imagery to rapidly assess the impact of natural hazards events.

FY 2002 Goal

Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the average number of streamgages (5,574) delivering real-time data on the Internet and increasing by 120 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

Goal Description

Programs: USGS will enhance our ability to characterize and monitor hazardous events in near real and real time by adding telemetered streamgages and earthquake sensors that are capable of delivering information almost instantaneously. In addition, long-term data vital both to emergency response and to analysis of flood, earthquake, and other hazard risks will continue to be collected and maintained through current monitoring networks.

We will upgrade our monitoring infrastructure; measure the reliability, delivery times, and accuracy of our real-time hazards information to evaluate improvements; and improve the utility of our information by identifying areas vulnerable to damage by particular hazards. Scientific datasets integral to the delivery of hazards information — key maps and geospa-

tial information, for example, will be made easier to interpret and integrate. This will assist in risk assessment, rescue, recovery, and reconstruction efforts. Stakeholder meetings will be held with customers, cooperators, and the public who have a major role or interest in hazard warning or response to help us define needs and set program priorities. We will also continue to develop better ways to measure outcomes linked to those of our key partners such as the Federal Emergency Management Agency, National Weather Service, and State groups.

Operations: USGS will maximize the efficiency of administrative, science support, and programmatic activities by streamlining and enhancing the reliability of our systems for hazards data delivery. We will continue to upgrade our information infrastructure as funding allows us to improve our ability to integrate hazards-related data and assessments.

People: Our employees are at the core of achieving the Hazards goal over the long term. They are in the field before, during, and after events, installing instruments and making measurements. They use a wide range of analysis and modeling methods to turn these measurements into improved hazard assessment products.

We will evaluate our current capabilities and skills, and actively invest in training employees in the skills needed to keep pace with technology to understand and model natural systems. We are aligning our rewards systems to encourage the integration of capabilities and to support increased responsiveness to customers' needs, such as better prediction of and response to hazards, and development of tools tailored to the needs of emergency managers. Finally, we will respond more quickly and effectively to natural disasters by developing response plans, using new contractual mechanisms for obtaining new skills, removing barriers to resource sharing, and increasing use of cooperative agreements with other emergency response entities.

Customers: USGS will focus on understanding the needs of key users of hazards information, such as emergency managers, industry, community planners, and citizens. We will increase development and delivery of products and services tailored to the current and future needs of these customers.

A BULGE IN THE EARTH

Using Satellite Radar Interferometry (InSAR), USGS scientists have detected a slight swelling (maximum about 10 centimeters) in the Cascade Range near South Sister volcano. The uplift, which occurred between 1996 and 2000, covers an area about 15 to 20 kilometers in diameter and is too broad and low to be noticed from the ground. The uplift may reflect intrusion of a small volume of magma (molten rock) deep under the surface – difficult to detect until development of techniques such as InSAR. If intrusion of magma were to continue, it could eventually lead to a volcanic eruption. Public officials and agencies in the State of Oregon and in Lane and Deschutes Counties have been briefed on these findings, and they and scientists will work together to address any concerns the public may have. Working with the University of Washington and the Willamette National Forest, USGS installed a seismometer and Global Positioning System receiver to record small local earthquakes not detectable by the regional seismic network and will track any ongoing uplift. Data from the real-time instruments will help scientists determine whether the uplift is still occurring and evaluate the potential for a possible future eruption. This research has been funded by the Volcano Hazards Program. More information is available at http://vulcan.wr.usgs.gov/Volcanoes/Sisters/WestUplift/ground_uplift_may2001.html.

IMPROVEMENTS IN INFORMATION DELIVERY

The ability to assess quickly and accurately the magnitude and distribution of floods and droughts improved dramatically in FY 2001 with the release of the USGS WaterWatch web site (http://water.usgs.gov/waterwatch/). WaterWatch is a comprehensive collection of maps and graphs of current streamflow conditions for the 50 States and Puerto Rico. The new site expands and enhances the previous Daily Streamflow Conditions Map that USGS pioneered 2 years ago, by expanding the map products to include real-time, daily, and weekly streamflow, as well as two special maps highlighting current flood and high flow and hydrologic drought conditions.

GPRA Program Activity - Hazards									
Budget Activity/Subactivity ($000)	FY 2001 Enacted			FY 2002 Enacted			FY 2003 Budget Request		
	Total	GPRA Activity 1	%	Total	GPRA Activity 1	%	Total	GPRA Activity 1	%
National Mapping Program*	130,426	1,577	1%	133,277	1,300	1%	129,294	1,300	1%
Mapping Data Collection and Integration	56,434	200	0%	60,172	0	0%	57,476	0	0%
Earth Science Info Management and Delivery	37,329	0	0%	36,182	0	0%	35,427	0	0%
Geog Research and Applications	36,663	1,377	4%	36,923	1,300	4%	36,391	1,300	4%
Geologic Hazards, Resources, and Processes*	225,321	90,302	40%	232,810	94,078	42%	224,656	91,917	41%
Geologic Hazard Assessments	72,726	72,726	100%	75,004	75,004	100%	73,971	73,971	100%
Geologic Landscape and Coastal Assessments	74,375	17,576	24%	77,973	19,074	26%	73,217	17,946	25%
Geologic Resource Assessments	78,220	0	0%	79,833	0	0%	77,468	0	0%
Water Resources Investigations*	201,716	23,702	12%	205,826	24,180	12%	177,828	22,084	12%
Water Resources Assessment and Research	94,840	0	0%	96,723	0	0%	77,834	0	0%
Water Data Collection and Management	38,680	12,818	33%	38,785	13,028	34%	35,655	10,932	31%
Coop Water Program	62,741	10,884	17%	64,318	11,152	17%	64,339	11,152	17%
Water Resources Research Act Program	5,455	0	0%	6,000	0	0%	0	0	0%
Biological Research*	160,569	0	0%	166,389	0	0%	160,481	0	0%
Biological Research and Monitoring	128,788	0	0%	133,502	0	0%	127,619	0	0%
Bio Info Management and Delivery	17,704	0	0%	18,917	0	0%	18,893	0	0%
Cooperative Research Units	14,077	0	0%	13,970	0	0%	13,969	0	0%
Programmatic Total	718,032	115,581	16%	738,302	119,558	16%	692,259	115,301	17%
General Administration/Science Support* (prorated)	73,733	11,797	16%	86,255	13,800	16%	86,104	14,638	17%
Facilities* (prorated)	88,341	14,135	16%	89,445	14,312	16%	88,975	15,126	17%
Appropriations Total (not including supplementals)	880,106	141,513	16%	914,002	147,670	16%	867,338	145,065	17%

*Budget Activity

GPRA Program Activity - Hazards - Budget Restructure Funding Breakout									
Budget Activity/Subactivity ($000)	FY 2001 Enacted			FY 2002 Enacted			FY 2003 Budget Request		
	Total	GPRA Activity 1	%	Total	GPRA Activity 1	%	Total	GPRA Activity 1	%
Mapping, Remote Sensing, & Geographic Investigations*	130,426	1,377	1%	133,277	1,300	1%	129,294	1,300	1%
Cooperative Topographic Mapping	81,481	0	0%	81,067	0	0%	80,940	0	0%
Land Remote Sensing	32,537	0	0%	35,849	0	0%	32,828	0	0%
Geographic Analysis & Monitoring	16,408	1,377	8%	16,361	1,300	8%	15,526	1,300	8%
Water Resources Investigations*	201,716	23,702	12%	205,826	24,180	12%	177,828	22,084	12%
Hydrologic Monitoring, Assessments, and Research	133,520	12,818	10%	135,508	13,028	10%	113,489	10,932	10%
Cooperative Water Program	62,741	10,884	17%	64,318	11,152	17%	64,339	11,152	17%
Water Resources Research Act Program	5,455	0	0%	6,000	0	0%	0	0	0%

*Budget Activity

($000)

GPRA Activity Budget History	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Enacted	FY 2001 Enacted	FY 2002 Enacted	FY 2003 Pres. Request
Hazards	118,906	120,691	131,161	141,513	147,670	145,065

GPRA PROGRAM ACTIVITY: HAZARDS

Long-Term Goal: Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the average number of streamgages reporting real-time data on the Internet during each quarter to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.

FY 2003 Annual Performance Goal: Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the average number of streamgages (5,441) delivering real-time data on the Internet and increasing by 50 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

Performance Measures	1998 Actual	1999 Actual	2000 Actual	2001 Target	2001 Actual	2002 Plan	2003 Proposed
Hazards monitoring networks maintained	6	6	6	6	6	6	6
Risk Assessments Delivered	16	16	17	8	26	17	14[1]
Real-time streamgages on the Internet (qtr. Average)	N/A	4,500	4,872	5,374	5,280	5,574	5,441[1]
Real-time earthquake sensors (cumulative)	100	120	201	329	329	449	499[2]
Stakeholder Meetings	16	16	40	32	27	23	28
Customer satisfaction**	Pilot	Pilot	Baseline	Baseline Single Goal	Not Met	Baseline Single Goal	Measure Goal

** For a description of Customer Satisfaction Measurement and Index Development, see Section 3.1.

[1] The proposed reduction of $2 million to the streamgaging program reduces not only the number of streamgages on the internet, but also, coupled with the reduction in the water research programs reduces the number of risk assessments

[2] USGS Strategic Plan projected installment of 100 earthquake sensors per year within base funding. Our Stakeholders and partners in the Advance National Seismic System (ANSS) initiative have recommended that some of the funds for FY 2003 be spent on developing communication links and data analysis procedures to deal with the increased data flow from the new instruments installed in the previous three years; therefore 50 rather than 100 sensors will be installed.

FY 2001 ANNUAL PERFORMANCE REPORT

FY 2001 Goal: Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 500 the quarterly average number of streamgages delivering real-time data on the Internet, and increasing by 128 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

FY 2001 Performance Report: USGS met our hazards monitoring network maintenance and real-time earthquake sensors targets and exceeded delivery of risk assessments over threefold. Targets not met this fiscal year are real-time streamgages on the Internet and stakeholder meetings.

Streamgages – During FY 2001 USGS has made a transition from the old decentralized computer systems that served real-time data to the public and to other government agencies via the Internet, to a new centralized web based National Water Information System (NWIS). At the beginning of the fiscal year, real-time data were served on the Internet from nearly 50 individual servers located in every USGS District Office. At the end of FY 2001 these data were uploaded from the District Office servers and served on the Internet from the central NWIS-Web server. Each real-time streamgaging station reporting data had to be cleared/approved before its data could be uploaded to NWIS-Web. This process has caused delays in getting some real-time streamgaging sites included in the NWIS-Web database. Plans are to recover the target by middle FY 2002.

Stakeholder Meetings – Some meetings were combined this year, others cancelled.

Customer Satisfaction Metric – Product attrition and lower than anticipated response rates for the survey of Hazard products led us to defer achievement of a baseline for Hazards. A baseline index for Environment and Natural Resources products of 95 percent was defined in FY 2001. For FY 2002, we will attempt to expand the hazards survey to derive an independent metric.

NATIONAL LANDSLIDE HAZARD MITIGATION STRATEGY REPORT

The USGS completed a report entitled "National Landslide Hazard Mitigation Strategy," prepared at the request of Congress and available at http://landslides.usgs.gov. The report outlines a framework for reducing losses from landslide hazards as well as concerns for the rising costs of landslide hazards facing the Nation. The strategy covers developing new partnerships between government, academia, and the private sector to manage the hazards, and expanding landslide research, mapping, assessment, monitoring, forecasting, information dissemination, development of mitigation tools, and emergency preparedness and response.

WATCHING CONTINENTS GROW--THE EVOLUTION OF THE NORTHERN PACIFIC RIM

As part of an effort to understand the origins of the multiple mineral belts flanking the northern Pacific Rim, USGS scientists and collaborators from many countries have created a dynamic computer model that synthesizes the geologic evolution of Alaska, western Canada, and the Russian Far East. Available as a CD-ROM, the program allows the user to move back and forth through the last 400 million years to observe basins opening and closing, volcanic island arcs colliding with continents, and slivers of land masses sliding past one another. It is being used as a tool to help scientists interpret the distribution of mineral deposits of a very geologically complex region. USGS Open-File Report 01-261, funded by the USGS Mineral Resources Program, was prepared in collaboration with the Russian Academy of Sciences, the Russian Geological Committee, the Alaska Division of Geological and Geophysical Surveys, and the Geological Survey of Canada.

DATA QUALITY

Each performance measure has its own performance data collection strategy and validation hierarchy of review and will be modified as regional leadership oversight evolves to ensure regional aspects of programs are being met. In addition to the processes cited, USGS conducts cyclical program evaluations that contribute to the validation of performance measurement.

Baseline	**1998 – 6 Hazards monitoring networks maintained:** A monitoring network consists of an array of sensing devices, IT infrastructure, and personnel that together detect, record, interpret, integrate and deliver data for a given hazard (6 networks– Earthquake, Volcano, Landslide, Flood, Geomagnetism, and Integrated Network).
Data Validation - Supplemental	The National Research Council (NRC) validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of digital databases and infrastructure is fundamental to ensuring that this future role is attained.
Data Verification - Supplemental	Program Coordinators and Science Discipline Coordinators verify performance data.
Data Source	Managers monitor and supervise functioning of networks at observatories, research centers, and Water Districts, and report status by exception. Performance data are tangible entities that were counted and verified by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 16 Risk assessments delivered:** Regional or national assessment of risk for one or more hazards.
Data Validation - Supplemental	The NRC validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of research products is fundamental to ensuring that this future role is attained. Quality of research is captured in peer review and evaluations.
Data Verification - Supplemental	USGS Annual Publications listing verifies publication. Accuracy of reports listing can be confirmed by each internal organization's reports tracking system.
Data Source	Hazards assessments are tracked as published USGS reports; Hazards notifications based on monitoring data are recorded at and reported by USGS observatories, centers, etc. Performance data are tangible entities that were counted and verified by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1999 – 4,500 Real-time streamgages:** Telemetry is added to existing streamgages to provide real-time flow info for NWS forecasters and emergency management and response officials. The metric reflects not only the number of real-time streamgages that USGS puts in place each year but also captures our ability to deliver hazards data to those who need it.
Data Validation - Supplemental	Performance measure must support specific decisions about future improvements to the streamgaging network; otherwise performance data will not be collected, compiled or analyzed. Customers and stakeholders are engaged in the strategic planning of performance goals.
Data Verification - Supplemental	The Water Resources Headquarters Webmaster certifies the performance data.
Data Source	USGS developed a "robot" program that queries each District Office Web site every day, asking: "how many sites are delivering real-time data on the Web right now?" This query results in a total number of gaging stations across the Nation that are delivering real-time data over the Internet at that particular moments. At the end of the quarter, all the daily values collected by the robot program will be averaged together, resulting in one number that represents the "quarterly average number of gages reporting real-time data on the Internet."
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 100 Real-time earthquake sensors:** Ground motion detectors are the initial instrument installed to capture and transmit real-time information.
Data Validation - Supplemental	Performance measure must support specific decisions about future improvements to the earthquake monitoring network, otherwise performance data will not be collected, compiled or analyzed. Customers and stakeholders are engaged in the strategic planning of performance goals.
Data Verification - Supplemental	The Seismic Network Manager certifies the status of installation efforts reported by the regional network operators. The coordinator of the Earthquake Hazards Program certifies the performance data and transmits to the Director's Office.
Data Source	USGS seismic network operators report installation status to the Seismic Network Manager who reports to the Earthquake Program Manager. Performance data were captured by a physical count by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 16 Stakeholder meetings:** Major meetings with other Federal Agencies, customers, cooperators, Administration and congressional oversight groups and/or the public who have a major role/interest in hazard warning or response.
Data Validation - Supplemental	The NRC recommended that USGS do even more in reaching out and being responsive to our partners and customers. While we feel that we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We need to, and will, do more and believe that this performance measure is an indicator of outreach.
Data Verification - Supplemental	Regional or Associate Director verifies that stakeholder meetings have taken place.
Data Source	Program coordinator schedules, organizes/attends annual stakeholder meetings and maintains records that the meetings have taken place. Performance data were captured by a physical count by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Eskimo Students Assist in Biological Research. *USGS scientists in Alaska are continuing to enhance communication between government researchers and Native Alaskans. USGS recruited Eskimo students to assist in a waterfowl study on the Yukon-Kuskokwim Delta in Alaska. The students captured geese and swans and fitted them with leg bands and neck collars; movements of these waterfowl are being monitored as part of a large study to determine annual survival rates, migration pathways, and important staging and winter habitats. More than 150 Eskimo youth have volunteered to participate in this program since 1986.*

2.2 GPRA PROGRAM ACTIVITY: ENVIRONMENT AND NATURAL RESOURCES

Description

USGS provides science in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national, and global scales, and enhance predictive/forecast modeling capabilities.

Our environment — the air, water, soil, and plant and animal life — is constantly changing as natural processes and human actions affect it. Changes in demographics also affect the competition for and use of the renewable and nonrenewable natural resources — land, water, minerals, and energy — needed to sustain life, and to maintain and enhance our Nation's economic strength. As land and resource management issues become increasingly complex, both environmental and natural resources sciences are needed to guide decisions, predict outcomes, and monitor results. The need for cross-disciplined, integrated science has never been more apparent. USGS environment and natural resources mission activities focus on studies of natural, physical, chemical, and biological processes, and on the results of human actions. These studies encompass collecting data, making long-term assessments, conducting ecosystem analyses, monitoring change, and forecasting the changes that may be expected in the future. USGS also works closely with the Fish and Wildlife Service and others in monitoring and reporting on wildlife disease outbreaks.

The USGS cannot and does not seek to use only our own resources to collect all of the environmental and natural resources data required for managers, regulators, and the general public to make informed decisions. We are increasingly building partnerships among Federal, State, local, private, and industrial entities to leverage resources and expertise.

Established protocols for data collection are critical to ensuring the comparability, validity of interpretation, integration, and usefulness of data for land and resource decisionmaking. The USGS is establishing data standards and protocols and working with customers to: identify their long-term environmental and natural resource issues, current trends, and available information to improve our data collection and data management efforts; deliver systematic analyses needed by our customers; and develop and improve decision support systems. We are also seeking new applications and increased use of our classified assets.

KEEPING LAKE TAHOE BLUE WITH MAP TOOL

USGS is working with the Tahoe Regional Planning Agency to create a land-use planning tool that gives decision makers critical information regarding ecosystem and economic impacts associated with management activities and regulations. USGS scientists considered existing land use as a portfolio of current assets, and estimated each land use category's impact on lake clarity, much like rating stocks for rate of return. An interactive tool was created that allows planners to estimate how changes in the portfolio of land uses will change the cumulative impact. First results are promising enough that planners are now considering this approach as an alternative to the current system of allocating building permits.

FY 2002 Goal

Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 45 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 1,008 new systematic analyses and investigations to our customers; improving and developing 7 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 internal grants and contracts.

Goal Description

Programs: Environment and Natural Resource programs will focus on understanding, modeling, and predicting how multiple forces affect natural systems. This knowledge will enable land managers and citizens to make sound decisions about how to live on and manage the land. The USGS will provide these customers with a better understanding of natural systems at all scales, with more and better predictive tools and decision support systems, and with easier access to natural science data. As funding permits, the USGS will continue to improve the quality and usability of our long-term datasets and accompanying interpretive products, including water quantity and quality assessments, mineral and energy information, biological data and information, water use information, and high-quality digital maps depicting the character of the earth's surface. In particular, we will develop predictive models and decision support systems that allow managers and decision-makers to evaluate the resource and environmental consequences of management choices under various scenarios. This information can be used to improve management decisions. Stakeholder meetings will be held with customers, cooperators, and the public who have a major role or interest in environment and natural resource issues to help us define needs and program priorities.

Operations: USGS will improve the efficiency of administrative, science support, and programmatic activities to streamline systems for delivery of environment and natural resources data and information. USGS will implement our Information Infrastructure Plan to ensure that data comply with common standards and protocols.

People: As with Hazards, USGS employees are at the core of achieving the Environment and Natural Resources goal. USGS will assess our current capabilities and skills and actively invest in training our employees in the skills needed to improve our ability to understand natural systems, develop improved predictive models, and better communicate with customers. USGS is aligning our rewards systems to reinforce the need for better integration of capabilities and more responsiveness to customer needs. Finally, we will take steps to increase our flexibility to respond quickly and effectively to the needs of our customers by putting in place new contractual vehicles for obtaining new skills, removing barriers to resource sharing, and increasing use of cooperative agreements with others who use our data and information on natural resources and the environment.

Customers: We will focus on key users of environment and natural resources information, such as Interior Bureaus and other Federal, State, and local managers, to ensure their needs are understood and are being met.

TRANSITION OF LANDSAT OPERATIONS

In FY 2001, the USGS successfully assumed responsibility for operations of the Landsat 7 Earth-observing satellite, launched in April 1999. Thanks to close cooperation with NASA personnel and timely support from the USGS Office of Contracts in Denver, a smooth transition of operations took place in October 2000 without a break in pre-scheduled imaging or data downlink activities. The Landsat 7 mission strategy is archive based; that is, the system was designed to collect seasonal, global data sets of land and coastal images to support scientific investigations of natural or human-induced changes on the Earth's surface. As FY 2001 came to a close, the USGS-managed system had brought the total number of U.S.-archived Landsat 7 scenes of the global landmass to nearly 200,000 and distributed over 18,000 scenes to scientists and a wide variety of other users within worldwide remote-sensing community.

GPRA Program Activity - Environment and Natural Resources									
Budget Activity/Subactivity ($000)	FY 2001 Enacted			FY 2002 Enacted			FY 2003 Budget Request		
	Total	GPRA Activity 2	%	Total	GPRA Activity 2	%	Total	GPRA Activity 2	%
National Mapping Program*	130,426	128,849	99%	133,277	131,977	99%	129,294	127,994	99%
Mapping Data Collection and Integration	56,434	56,234	100%	60,172	60,172	100%	57,476	57,476	100%
Earth Science Info Management and Delivery	37,329	37,329	100%	36,182	36,182	100%	35,427	35,427	100%
Geog Research and Applications	36,663	35,286	96%	36,923	35,623	96%	36,391	35,091	96%
Geologic Hazards, Resources, and Processes*	225,321	135,019	60%	232,810	138,732	58%	224,656	132,739	59%
Geologic Hazard Assessments	72,726	0	0%	75,004	0	0%	73,971	0	0%
Geologic Landscape and Coastal Assessments	74,375	56,799	76%	77,973	58,899	74%	73,217	55,271	75%
Geologic Resource Assessments	78,220	78,220	100%	79,833	79,833	100%	77,468	77,468	100%
Water Resources Investigations*	201,716	178,014	88%	205,826	181,646	88%	177,828	155,744	88%
Water Resources Assessment and Research	94,840	94,840	100%	96,723	96,723	100%	77,834	77,834	100%
Water Data Collection and Management	38,680	25,862	67%	38,785	25,757	66%	35,655	24,723	69%
Cooperative Water Program	62,741	51,857	83%	64,318	53,166	83%	64,339	53,187	83%
Water Resources Research Act Program	5,455	5,455	100%	6,000	6,000	0%	0	0	0%
Biological Research*	160,569	160,569	100%	166,389	166,389	100%	160,481	160,481	100%
Biological Research and Monitoring	128,788	128,788	100%	133,502	133,502	100%	127,619	127,619	100%
Bio Info Management and Delivery	17,704	17,704	100%	18,917	18,917	100%	18,893	18,893	100%
Cooperative Research Units	14,077	14,077	100%	13,970	13,970	100%	13,969	13,969	100%
Programmatic Total	718,032	602,451	84%	738,302	618,744	84%	692,259	576,958	83%
General Administration/Science Support* (prorated)	73,733	61,936	84%	86,255	72,455	84%	86,104	71,466	83%
Facilities* (prorated)	88,341	74,206	84%	89,445	75,133	84%	88,975	73,849	83%
Appropriations Total (not including supplementals)	880,106	738,593	84%	914,002	766,332	84%	867,338	722,273	83%

*Budget Activity

GPRA Program Activity - Environmental & Natural Resources Budget Restructure Funding Breakout									
Budget Activity/Subactivity ($000)	FY 2001 Enacted			FY 2002 Enacted			FY 2003 Budget Request		
	Total	GPRA Activity 2	%	Total	GPRA Activity 2	%	Total	GPRA Activity 2	%
Mapping, Remote Sensing, & Geographic Investigations*	130,426	129,049	99%	133,277	131,977	99%	129,294	127,994	99%
Cooperative Topographic Mapping	81,481	81,481	100%	81,067	81,067	100%	80,940	80,940	100%
Land Remote Sensing	32,537	32,537	100%	35,849	35,849	100%	32,828	32,828	100%
Geographic Analysis & Monitoring	16,408	15,031	92%	16,361	15,061	92%	15,526	14,226	92%
Water Resources Investigations*	201,716	178,014	88%	205,826	181,646	88%	177,828	155,744	88%
Hydrologic Monitoring, Assessments, and Research	133,520	120,702	90%	135,508	122,480	90%	113,489	102,557	90%
Cooperative Water Program	62,741	51,857	83%	64,318	53,166	83%	64,339	53,187	83%
Water Resources Research Act Program	5,455	5,455	100%	6,000	6,000	100%	0	0	0%

($000)

GPRA Activity Budget History	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Enacted	FY 2001 Enacted	FY 2002 Enacted	FY 2003 Pres. Request
Environment & Natural Resources	640,254	677,205	682,215	738,593	766,332	722,273

*Budget Activity

GPRA PROGRAM ACTIVITY: ENVIRONMENT AND NATURAL RESOURCES

Long-Term Goal: Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.

FY 2003 Annual Performance Goal: Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 46 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 957 new systematic analyses and investigations to our customers; improving and developing 8 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 153 external grants and contracts.

Performance Measures	1998 Actual	1999 Actual	2000 Actual	2001 Plan	2001 Actual	2002 Plan	2003 Proposed
Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported	40	40	46	46	46	47	48[1]
New systematic analyses and investigations delivered to customers	865	959	1,113	1,146	1,018	1,008	957[2]
Decision support systems or predictive models developed or improved, and delivered to customers	5	7	7	7	7	7	8
University-based partnerships for natural system analysis	270	238	209	209	239	209	153[3]
Stakeholder meetings	212	473	468	458	592	529	481
Customer Satisfaction **	Pilot	Pilot	Baseline	Baseline Single Goal	95%	90%	90%

** For a description of Customer Satisfaction Measurement and Index Development, see Section 3.1.

[1] Increase results from the proposed U.S. Mexico Border Environmental Health Initiative.

[2] The majority of the target decrease results from proposed funding decreases in NAWQA and phase-out of the Toxics Substance Hydrology Research program.

[3] Elimination of the Water Resources Research Institutes Program reduces target by 56 partnerships.

FY 2001 ANNUAL PERFORMANCE REPORT

FY 2001 Goal: Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision-making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting two large data infrastructures managed in partnership with others; delivering 1,146 new systematic analyses and investigations to our customers; improving and developing seven new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 external grants and contracts.

FY 2001 Performance Report for FY 2001: USGS met our environment and natural resources data collection and management, decision support system, and customer satisfaction targets and exceeded our university-based partnerships and stakeholder meeting targets. Not met this fiscal year is the systematic analyses and investigations target. An emphasis on consolidation of studies into projects reduced the number of analyses reported. The evolution of the definition resulted in guidance being issued for FY 2002 to count completion of projects rather than tasks as "systematic analyses and investigations."

GREAT SALT LAKE MINERAL AND ECOLOGICAL ISSUES

The salinity of Great Salt Lake is determined by the amount of inflow (and its salt content) and the amount of evaporation. When there is a lot of inflow, the lake elevation increases and the salinity of the water decreases. When there is less inflow or the evaporation rate is high, the lake elevation declines and the water becomes saltier. In 1959, a solid-fill railroad causeway was constructed across the middle of the lake. Declining salinity in the southern part of the lake due to restricted circulation of brines through the causeway was threatening the salt and brine shrimp industries. Through the Cooperative Water Program, the USGS, collaborating with the Utah Department of Natural Resources and Tooele County, constructed a numerical model of lake water circulation and salt concentration. The State of Utah, using the results of the model, is now modifying the geometry of the breach in the causeway to decrease the imbalance of salt between the north and south parts of the lake.

DATA QUALITY

Each performance measure has its own performance data collection strategy and validation hierarchy of review and will be modified as regional leadership oversight evolves to ensure regional aspects of programs are being met. In addition to the processes cited, USGS conducts cyclical program evaluations that contribute to the validation of performance measurement.

Baseline	**1998 – 38 Long-term data collection and data management efforts maintained and improved, and 2 large data infrastructures supported:** Long-term, large-scale database efforts to ensure the collection, preservation, and dissemination of natural science data, including development of national infrastructures for the management and sharing of these data produced at all levels of government.
Data Validation - Supplemental	National program element reviews and reviews of individual research centers validate biological databases. The National Research Council (NRC) validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of digital databases and infrastructure is fundamental to ensuring that this future role is attained.
Data Verification - Supplemental	Reports provided by the Federal Financial System (FFS) and the Sales Data Base verifies the amount of maps, data, aerial photographs and satellite images available in the various geospatial databases and inventories. Program coordinators certify geologic databases. Each District Chief and the Office of Surface Water certify water resources data collection.
Data Source	Performance data are collected by project scientists at research/field centers and are reported through an automated, electronic system.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each long-term goal. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 840 New systematic analyses and investigations delivered to customers:** Reports or other products delivered to managers or the scientific community that result from long-term assessments or from investigations to determine causes and/or effects of environmental change. Reports and other products are delivered as paper copies or Internet products.
Data Validation - Supplemental	The NRC validated this performance measure in their findings that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future rule as a "natural science and information agency." Monitoring availability of research products is fundamental to ensuring that this future role is attained. Quality of research is captured in peer review and evaluations.
Data Verification - Supplemental	Accuracy of "new reports" can be confirmed using each internal organization's reports tracking system.
Data Source	USGS compiles a list of new publications monthly and makes it available on the Internet at: http://pubs.usgs.gov/publications/index.html. Performance data were captured by a physical count by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each long-term goal. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 4 Decision support systems or predictive models developed or improved and delivered to customers:** Decision support tools and predictive models are broad in scope, are robust, yield either quantitative predictions about natural resources or the environment or quantitative options for land and resource management, and are used regularly by managers for informed decisionmaking.
Data Validation - Supplemental	Customers validate that the systems and models are acceptable and useful. The NRC validated this performance measure in their recommendation that multi-scale, multidisciplinary, integrated projects that use system modeling are the best way to address the Nation's complex natural resource problems.
Data Verification - Supplemental	For mapping models, the Senior Program Advisor for Geographic Research and Applications verify delivery and use by customers. For geologic models, verification is conducted by program coordinators and stakeholder representatives. For water resources models, a technical memorandum is issued for each model. For biological models, verification occurs through national program element reviews and reviews of individual research centers.
Data Source	Data on development delivery and use of decision support systems and predictive models are monitored and reported by project scientists at research/field centers and are reported through automated, electronic systems such as http://water.usgs.gov/software/ for new water investigation models and Science Information System (SIS) http://biology.usgs.gov/science/currproj.html for biological models. Performance data were captured by a physical count by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each long-term goal. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 270 University-based partnerships for natural system analysis:** 55 Water Resources Research Institute partnerships. 215 Biological Resources Coop Research Unit partnerships.
Data Validation - Supplemental	The NRC program evaluation recommended that USGS do even more in reaching out and being responsive to our partners and customers. USGS continues to explore alternatives to the university based partnership measure to better capture cooperative activities.
Data Verification - Supplemental	Certification from USGS Contracts Office that the partnerships have been awarded.
Data Source	Performance data were captured by a physical count for water resources research partnerships, source of data is the Chief, Office of Research. For biological partnerships, source of data is the Cooperative Research Unit Coordinator.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each long-term goal. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Baseline	**1998 – 216 Stakeholder meetings:** Major meetings with other Feds, customers, cooperators, Administration and congressional oversight groups and/or the public who have a major role/interest in environmental and natural resource issues.
Data Validation - Supplemental	The NRC program evaluation recommended that USGS do even more in reaching out and being responsive to our partners and customers. While we feel that we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We need to, and will, do more and believe that this performance measure is an indicator of outreach.
Data Verification - Supplemental	Regional or Associate Director verifies that stakeholder meetings have taken place.
Data Source	Program coordinator schedules, organizes/attends annual stakeholder meetings and maintains records that the meetings have taken place. Performance data were captured by a physical count by in-house sources.
Data Limitations	No significant performance data limitations identified.
Necessary Actions	The USGS will continue to build upon current measures for each long-term goal. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

Section III

Additional GPRA Information

3.1 CUSTOMER SERVICE

Customers are a key component of the USGS Strategic Plan. Not only are we actively obtaining customer feedback regarding our information, services, products and programs, but we are also talking with our customers, listening to them, and proactively creating the opportunities to engage our customers into our program planning and refinement processes.

Report to Customers: Since 1996 we have published annual reports that are packed with examples of the ways customers are using our products to make a difference and with data that examine what we are hearing from our customers. Also included is a review of the USGS customer service goals and standards. A copy of our latest report, the 2001 Report to Customers, may be found on-line at http://www.usgs.gov/customer.

Customer Satisfaction Index: The first bureau-wide Customer Satisfaction Survey (CSS) providing a satisfaction sampling of science products from across the bureau has been completed. While there have been many satisfaction evaluations of science products over time, they have been done on a program-by-program basis without a standard format. Now, some 20-science programs have participated in mini-surveys (about 10 questions or so) via email to samples of specific science product users. While the surveys all followed the same format, each one was somewhat modified to meet a specific program's customer information needs. The final result of each survey was immediately useful to the program manager as well as formatted for combined bureau analysis of satisfaction ratings and usage by product type and discipline area. A sample outcome in customer commentary and USGS response is provided in the box on the next page. USGS Executive Leadership Team members will also use these data as part of their planning efforts.

In addition to the mini-surveys, results from three other sources were included in the FY 2001 satisfaction assessment: (1) the External Task Force Review of the U.S. Geological Survey Federal-State Cooperative Water Program (August 1999; Circular 1192); (2) a user needs survey on the "The Quality of Our Nation's Waters—Nutrients and Pesticides (1999; Circular 1225); and (3) the most recent results from the Partner and Customer Survey Report on Biological Programs. An index of satisfaction was developed as a bureau-level form of measurement.

Baseline data were collected with the CSS beginning in FY 2000 and continued through the first quarter of FY 2001. More than 1,000 customers, mostly scientists, described their satisfaction with various aspects of USGS science products. We attempted to define a metric for each mission goal. Product attrition and lower than anticipated response rates for the survey of hazard products led us to conclude that this expectation was premature. A baseline index of satisfaction with USGS Environment and Natural Resources products of 95 percent was defined in FY 2001. For FY 2002, we will attempt to expand the hazards survey to derive an independent metric. Because we will be sampling a different set of products each year, one year's measurement is not directly linked to the following, that is, these should not be considered strictly comparable time series measurements. Regardless of the set of products being sampled, however, the intent is to maintain at least a 90 percent satisfaction level.

FY 2001 USGS CUSTOMER SERVICE PLAN ACCOMPLISHMENTS

Customer Action Team: To assist programs in gathering, measuring, and analyzing customer information, a Customer Action Team (CAT) has been established. One of its first functions is to establish the

Customer Satisfaction Outcome Survey: NASQAN Water Quality Data	
Sample of Customer Comments	**USGS Response**
• It would be a lot easier for most data users if the data could be shipped electronically in spreadsheet programs like Excel. • Get some header information on the actual files.	• Tab-delimited text downloads are being implemented to simplify the use of the data in spreadsheet programs. Header information will be included.
• Access needs to be easier for historical archived data, and quicker for new data.	• NASQAN web pages will focus on providing integrated data from the entire program and are being re-designed to permit easier access to the data.
• Having real time discharge data (even if provisional) would greatly facilitate timely sample collection and flux calculations. • Would appreciate clear reporting of instantaneous flow rate and some analysis or discussion of how the flow rate during the sample compares with flow rates in the two months preceding the sample. • Might be helpful to allow people to choose just the characteristics they want, as opposed to simply a flat file that can't be changed.	• A new web-based data distribution system called National Water Information System - Web (NWIS-W), was made available to the public in summer 2001. This system is now our primary means of distributing data, and includes many of the features requested by the survey participants, including links to real-time discharge data as well as water quality data, and user-specified retrieval formatting. Eventually the data that are now available from the NASQAN web page will be accessible directly from NWIS-Web.

use of the customer information framework among the bureau's programs. While all programs have a wide range of customer data, the data are not in easily accessible or easy-to-combine forms and require significant effort via data calls and aggregation to get information that can be used at a bureau level. A key goal for the CAT is to help programs gather and manage customer data in a common way while ensuring there is immediate value to the programs as well as the bureaus.

Collect Customer Satisfaction Information: The USGS continued under a 3-year information collection program, approved by the Office of Management and Budget (OMB) in 1999, to work directly with customers to research service performance. The survey, initiated in 1999 to obtain input from visitors to and customers of our Earth Science Information Centers, was expanded to include web sites in 2000. The customer survey of biological programs continued for its sixth year. Further expansion in FY 2001 included samples of science products with customer satisfaction mini-surveys.

Leadership of Interior's Customer Forum: USGS continued to participate in the DOI Customer Forum, an intradepartmental working group consisting of representatives from each Interior bureau and office. Members of the DOI Customer Forum received the first of the Secretary's Awards for Customer Service Excellence. The Forum cosponsored with the U.S. Environmental Protection Agency the Third Annual National Customer Service Conference held in Atlanta, GA, in November 2000. The conference brought together over 400 representatives of Federal, State, and local government agencies to share best practices and lessons learned in customer service. The next conference will be held in Washington, D.C. in August 2002, where a USGS representative is scheduled to speak on its Customer Satisfaction Survey methodology.

FY 2002 USGS CUSTOMER SERVICE PLANS

Customer Action Team: The CAT plans to complete the introduction of the Customer Information Framework to all bureau programs. The framework is a simple

method of managing customer information in a variety of formats.

Customer Satisfaction Survey: The CSS will expand the sample of science products concerned with hazards to create an independent metric for the hazards goal. Administration of the satisfaction survey will be converted to an ongoing activity with 2-3 science products surveyed each quarter.

Customer Engagement: The bureau is continually interested in establishing long-term mutual relationships with cooperators and partners. To encourage both integrated science and efficient use of resources, linking additional science disciplines into existing as well as newly developed partnerships is considered whenever possible. The bureau has and will continue to track these relationships as a form of customer measurement.

3.2 CROSSCUTTING ISSUES

The USGS is the science bureau for the Department of the Interior and the only integrated natural resources research bureau in the Federal Government. We support the Department's research needs as well as provide the water, biological, energy, and mineral resources information and capabilities needed by other Federal agencies and State and local governments to guide planning, management, and regulatory programs. Our research priorities are established in concert with our stakeholders to ensure their highest priority science needs are addressed, and to avoid duplication of effort among stakeholders. We continue to work with DOI bureaus to understand how scientific data and research results inform management decisions so that we can better define GPRA metrics and outcomes. The USGS maintains consistency of its priorities with program evaluations and the National Science and Technology Council's (NSTC's) underlying principles for Federal science and technology investments.

The **depth** of USGS coordination may be demonstrated by looking at stakeholders working collaboratively on complex issues such as fire management. Bureaus of the Departments of the Interior and Agriculture are coordinating their fire management efforts, not only among themselves, but also in concert with State and local government organizations, private industry, and non-profit groups. For example:

• The Bureau of Land Management (BLM), the National Park Service (NPS), the Fish and Wildlife Service (FWS), the Bureau of Indian Affairs (BIA), and the USGS of the Department of the Interior and the U.S. Forest Service (USFS) of the Department of Agriculture all participate in the Joint Fire Science Program (JFSP). The JFSP received specific direction from Congress to scientifically address four areas: fuels inventorying and mapping, evaluation of fuels treatments, scheduling of fuels treatments, and monitoring and evaluating fuels treatments. USGS scientists are conducting ten research and demonstration projects funded by the JFSP. Several other projects involve USGS scientists as cooperators.

"GO WITH THE FLOW" – JUVENILE SALMON MIGRATION

The USGS, in collaboration with the US Bureau of Reclamation, US Fish and Wildlife Service, and private industry (Natural Resource Scientists Inc.) conducted a juvenile salmon fish passage study in the vicinity of the Delta Cross Channel (DCC) gates in early FY 2001. These gates control flow of high quality Sacramento River water into the Central and South Delta in the San Francisco Bay area. The gates are opened to satisfy water quality standards at drinking water intakes. However, the Endangered Species Act dictates that the gates must be closed during certain periods in the late fall, winter, and spring to protect the juvenile Chinook salmon that migrate past the DCC to the ocean during the months of November through January. One of the overarching questions being asked of researchers was "do fish go with the flow?" In order to address this question, both biological and hydrodynamic data were collected in tandem to determine if flows or behavior govern the movement of fish through this region. Based on the analysis of the first year of data it appears that flow plays an important role in fish movement here. These pilot study results will help design further research to be continued over the next 3 years with the objective of defining the relationship between flow and fish behavior and to develop strategies for gate operation that will maximize both the water quality objectives and outmigrating juvenile salmon survival.

• The same six bureaus also participate in the National Fire Plan, which provides a coordinated approach to fire management, including developing significant new partnerships to better manage public land; integrating fire and resource management; restoring forest and rangeland health; completing land management planning and deferred maintenance and construction; increasing the ability to protect communities at risk from wildfire; enhancing the capabilities of rural fire district partners; and increasing the ability to protect natural resources (rangeland, forest, and wildlife). Currently USGS scientists serve as project managers for the National Fire Plan Information System, and the DOI Fire Risk Mapping (LandFire) effort. The National Fire Plan website resides on a USGS server and is being maintained by USGS webmaster. Map products for end-of-year reports to Congress and GIS technical assistance to list communities-at-risk and other planning and support activities are being conducted by USGS in close cooperation with the Office of Wildland Fire Coordination (OWFC) DOI bureaus at the National Interagency Fire Center, and the Forest Service.

• USGS fire ecologists are conducting research to understand the effects of wildland fire on vegetation, wildlife, threatened and endangered species and ecosystem structure, function, sustainability, and restoration and the historical role of fire in ecosystems. Of particular importance is understanding the role of fire in the spread and control of invasive plants. Most of this work is conducted on non-forested ecosystems and in national parks and other protected areas in direct support of DOI bureaus and others.

• USGS hydrologists and geomorphologists investigate the erosional response of burned watersheds in the Rocky Mountains and define conditions that indicate a susceptibility to debris-flow and landslide activity for watersheds throughout the West. USGS scientists assist and consult with burned area emergency response (BAER) teams; assess the effects of fire on watersheds, municipal water supplies, water quality, and rates of soil erosion and sedimentation; and evaluate the potential for floods, landslides and debris flows from burned areas.

• The USGS also provides spatial technologies and research experience in support of wildfire prediction, monitoring, and fire-fuel mapping. And, the USGS has teamed with Federal firefighting agencies and private industry to form the Geospatial Multi-Agency Coordination group (GeoMAC), which provides real-time information which enables fire operations personnel to assess regional fire situations and prioritize use of wildland fire suppression resources and ensure public and firefighter safety. Collaboration with other DOI bureaus and the Forest Service is emphasized.

• Over the past eight years USGS scientists have played an active role in the development of Federal and Department fire policy. As part of the interagency effort, USGS scientists helped develop the 1995 and 2001 Federal Wildland Fire Policies. USGS participated in the development of DOI Cohesive Fire Strategy and more recently, in conjunction with the Western Governors Association, the 10-Year Comprehensive Strategy "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment".

The **breadth** of USGS coordination may be demonstrated in the following representative listing of USGS crosscutting relationships with Federal, State, local, non-government, and international organizations.

Federal
National/Government-wide: Federal Geographic Data Coordination, National Spatial Data Infrastructure, National Biological Information Infrastructure, U.S. Global Change Research Program, National Atlas, Geographic Names, Image and elevation data collection programs
Agriculture/Forest Service: Endangered Species, Conservation genetics, Habitat management, Forest plan, Wildlife, Invasive species, Fire science, National Forest maps, Drought/Fire fuel monitoring, Energy and mineral resources, Natural hazards, Mine lands, Land cover characteristics, Hydrologic data collection/studies
Commerce: Web-based interactive mapping system, Hydrologic data collection/studies
Commerce/NOAA: Endangered Species, Salmonid restoration, Coral reefs, Hazards monitoring and research, Geomagnetism, Vegetation change, Coastal erosion, Fish habitat, Marine sanctuaries, GIS
Defense: Endangered Species, Salmonid restoration, Coral reefs, Coastal erosion, Backup mapping during conflict, Natural hazards, Test ban monitoring, Strategic minerals and energy resources, Geomagnetism, Terrain visualization, Hydrologic data collection/studies
Defense/Army Corps of Engineers: Endangered Species, Habitat assessment, Fish behavior, Fish physiology, Dam impacts, Wetlands restoration, Seafloor mapping, Shoreline stability, Floodplain morphology, Mine lands, Energy resources, Natural Hazards, Hydrologic data collection/studies
Energy: Endangered Species, Bio-resource monitoring, Contaminant cause and effects, Gas Hydrates, Mining technology, Energy resources, Geologic hazards, Groundwater framework, Coal bed methane, Hydrologic data collection/studies
EPA: Endangered Species, Endocrine disruption, Contaminant effects, Status/Trends, Mine lands and drainage, Emissions modeling/clean air, Water quality, Seafloor mapping, Geochemical analyses, Coal resources and mining, Urban dynamics/land characterization, Hydrologic data collection/studies Remote sensing, Mineral baselines, GAP Analysis
Federal Emergency Management Administration: Hazards monitoring and mitigation, Hydrologic data collection/studies
FEMA/Federal Insurance Administration: Hazards assessment
Health and Human Services: Chemical Analyses
Intelligence Community: Information coordination, Environmental/ resource studies, Hazards Support
Interior/BIA: Integrated Resources (water, geology, vegetation inventory, remote sensing)
Interior/BLM: Rangeland Health, Wild Horse Management, Invasive Species, Abandoned Mine Lands, Air Quality, Threatened and Endangered species, Water Quality, Mineral Resource Assessments, Prescribed Fire
Interior/BOR: Water quality, Ecological models, Decision Support Systems
Interior/FWS: Inventory and Monitoring, Aquatics and Contaminants, Biological resources, Threatened and Endangered species, Water Quantity/Quality, GAP Analysis
Interior/MMS: Gas hydrates
Interior/NPS: Water quantity/quality, Geologic mapping, Biological resources
Interior/OSM: Acid mine drainage
Justice: GIS
Labor: Energy resources
National Academy of Science: Hazards studies
National Aeronautics and Space Administration (NASA): Planetary research, Landsat 7 operations, Natural hazards, Earth Science research, Data management, Land Processes Distributed Active Archive, GIS, United Nations Environment Programme clearinghouse, Remote sensing
NASA/Jet Propulsion Lab: Spaceflight support
National Institutes of Health: Human health and environment
National Science Foundation: Hazards studies, Antarctic research and mapping, Global seismology
Smithsonian Institution: North American vertebrate collections
State: Natural hazards, Energy resources, Global seismology, Hydrologic data collection/studies
Tennessee Valley Authority: Hydrologic data collection/studies
Transportation/Federal Highway Administration: Hazards studies, Hydrologic data collection/studies
Transportation/Federal Aviation Administration: Volcanic hazards
U.S. Agency for International Development: Geologic hazards, Hydrologic data collection/studies, Energy resources, Atmospheric moisture index

State and Local Government

Airports: Volcanic hazards

American Indians/Alaska Natives: K-12 educational resources, Streamgaging, Water quality/ quantity, Technical training and capability upgrade, Environmental hazards, Fisheries research, Invasive species

Civil Defense: Hazards mitigation

Departments of Natural Resources/Geographic Information Councils: Volcanic hazards, Map data production, Hydrologic data collection/studies

Departments of Environmental Protection/Quality/Health: Hydrologic data collection/studies

Departments of Fish and Game/Conservation Commission/Wildlife and Parks: Endangered species, Population dynamics, Habitat requirements, Fire management, Fisheries, Wildlife disease, Invasive species, Waterfowl surveys, Bird banding, Aquaculture, GAP Analysis

Offices of Emergency Management/Services: Hazards monitoring and mitigation

Planning Commissions/Transportation/Engineering/Municipalities: Conservation plans, Hydrologic data collection/studies, Topographic mapping, Hazards monitoring/assessment

State Geological Surveys/Depts of Mines and Geology: Geologic and topographic mapping, Hazards assessment

Water Resources Authorities/Public Works/Sanitation: Contaminant Transport, Hydrologic data collection/studies

Nongovernment Organizations

American Farm Bureau/American Society of Civil Engineers/Chemical Manufacturers Association/etc.: Coordination of hydrologic programs

American Red Cross: Hazards monitoring and mitigation

Electric Power Research Institute: Coal quality

FERC permitees/licensees: Hydrologic data collection/studies, Restoration of Threatened and Endangered migratory fish

Industry: Spatial data modeling, Spatial data browsing and retrieval, Product development, registration, and production, Environmental monitoring, Acid rain deposition program

The Nature Conservancy: Endangered species, Species at Risk, Ecological research, Biological Status/Trends, Coordination of hydrologic programs, GAP Analysis

National Park and Conservation Association: Ecosystems assessments, Biological information

Universities/Cooperative Fish and Wildlife Research Units/State Water Resources Research Institutes: Planetary research, Space-based instrumentation, Natural science information delivery, Natural science research and applications, Hazards research, Training/education, Geologic mapping, Hydrologic data collection/studies, GAP Analysis

Utilities: Seismic studies, Hydrologic data collection/studies

Woods Hole Oceanographic Institute: Marine research

The General Public: Breeding bird survey, Bird banding, Water resources education/outreach

International

Global: The USGS has conducted earth science studies and provided natural hazards support in foreign countries for over 50 years. Authorization is provided under the Organic Act, as revised, and the Foreign Assistance Act and related legislation when such studies are deemed by the U.S. Department of the Interior and Department of State to be in the interest of the U.S. Government.

Africa: Ecological monitoring, Famine Early Warning System

Canada: Hydrologic data collection/studies, Scientific/technical cooperation

Central America: Hazards mitigation, Database development, GIS

China: Scientific/technical cooperation

International Civil Aviation Administration: Volcanic Hazards

International Organization for Standardization: Standards activities

Mexico: Border mapping, Habitat Restoration, Environmental Education, Water quantity/quality, Landscape health, Fish species

United Arab Emirates: Hydrologic data collection/studies

United Nations: United Nations Environment Programme/Global Resources Information Database, Geographic names activities

3.3 MANAGEMENT ISSUES

Information Technology Audit: The GIO has issued bureau Computer/Network Security Emergency Procedures that describe the specific steps to be taken, and associated responsibilities, in response to a serious computer security incident. In addition, the DOI Inspector General is currently conducting a regularly scheduled audit of IT security for USGS mission critical systems. USGS will use the findings from this audit to correct any identified weaknesses in IT security.

Financial Audit: The Office of Inspector General made five recommendations in its fiscal year 2000 audit of USGS' annual financial report. In FY 2001 USGS has implemented most of these recommendations. The recommendations and specific USGS actions are shown in the chart below.

SUMMARY OF OIG AUDIT OF USGS' FY 2000 FINANCIAL STATEMENTS

OIG		USGS	
Finding	**Recommendation**	**Planned Action**	**Target Date**
A. Fiscal year-end undelivered orders are overstated and accounts payable and expenses are understated	Train staff in accounting procedures and ensure accounts are properly stated at fiscal year end	–Convene an interdisciplinary task group to develop year-end guidelines –Issue year-end guidance –Provide training on year-end procedures	Done Done Done
B. There were a large number of adjustments to the budgetary accounts	Ensure adjustments are reconciled, supported, and reviewed	–The cause of the problem is USGS' long-standing accounting model. Initial changes (i.e., Fundsplit) were made this fiscal year, but will not be fully implemented until FY 2005. Other actions to implement this recommendation are to –Hire professional accounting staff –Complete posting model review by contractor –Review for validity all general ledger postings that don't include budgetary accounts –Develop automated general ledger reconciliation process	 Done Done 9/30/02 9/30/02
C. Some capitalized equipment records found to be incomplete or to contain inconsistencies and some Custodial Property Officers (CPOs) did not provide evidence of their official designation as CPOs	Ensure that procedures for maintaining accurate and complete property records are clear. Ensure that employees are reminded of their responsibilities. Ensure that all CPOs are designated in writing	–Issue reminders to employees concerning their property responsibilities –Contact CPOs whose property records are incomplete –Send email message to all Accountable Property Officers (APOs) and CPOs reiterating that they have been designated as APOs or CPOs	Done Done 03/28/02
D. An accounting system deficiency causes advance payments to be recorded inaccurately	USGS developed a manual "workaround" an FFS deficiency	–The "workaround" procedures have been implemented	Done
E. Incomplete compliance with the Prompt Payment Act	Update procedures and ensure they are followed	–Issue updated procedures –Provide training	Done Done

3.4 PROGRAM EVALUATIONS

Evaluations are critical to maintaining the USGS' reputation for scientific excellence and credibility as well as providing guidance for future research needs. We conduct both internal and external peer and management reviews to improve the accountability and quality of programs; identify and address gaps in programs; redirect or reaffirm program directions; identify and provide guidance for development of new programs; and reward and/or motivate managers and scientists. Reviews are both internal and external —conducted by USGS and non-USGS scientists, technicians, or specialists who are not involved in the specific proposal, project, program, or product under review. Our goal is to conduct an independent external peer review of ongoing programs about every 5 years, combined with more frequent independent internal management reviews. At the beginning of 2001, a special review of the entire USGS was released by the National Research Council. This review was conducted by a diverse committee under the direction of the Commission on Geosciences, Environment, and Resources and included natural scientists and specialists from academia, industry, non-profit organizations, and government. It recognized that the USGS "has evolved and built a solid foundation on which to plan its future." The report also recognized that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." The committee recommended that multi-scale; multidisciplinary, integrated projects that use system modeling are the best way to address the Nation's complex natural resource problems. A strong emphasis in the report was the need for improvement in USGS ability to assess and prioritize customer needs, to forge partnerships with government, industry, and academia, and to devote substantial efforts to recruiting and retaining excellent staff. In conclusion the report warns "future demands placed on the USGS can be expected to exceed the capacity of its financial and human resources." The USGS Strategic Plan addresses many of the NRC's recommendations.

The following evaluations completed in FY 2001 will also influence the contents of our Strategic Plan, metrics, the projects we conduct, and budget requests. Program evaluations scheduled for FY 2002 and FY 2003 will influence the content of the revised final FY 2003 Plan (post appropriation) and FY 2004 Plans.

FY 2001 Program Evaluations Completed	Scope and Methodology	Bureau Goal
Future Roles and Opportunities for the USGS	External Review by the National Research Council (NRC)	Hazards/ENR
Invasive Species Program	External Review	ENR
Earthquake Hazards	Internal Advanced National Systemic System (ANSS) Report to Congress in Oct 2000.	Hazards
National Cooperative Geologic Mapping Program	Internal/External Panel Federal Advisory Committee	ENR
Biological Resources Status and Trends	Internal/External Review	ENR
Upper Mississippi River System Environmental Management Program	Activities of the USGS Environmental Management Technical Center by DOI Inspector General	ENR

Program Evaluations Scheduled for FY 2002 Completion	Scope and Methodology	Bureau Goal
Geologic Record of Biosphere Dynamics	External Review by NRC	ENR
Minerals Program	External Review by NRC	ENR
Research Priorities in Geography at the USGS	External Review by NRC	Hazards/ENR
Future of Geography in the USGS	External Review by NRC	Hazards/ENR
Biology Contaminants Program	External Peer Review	ENR
River Science	External Review by NRC	Hazards/ENR
National Water Quality Assessment Program (NAWQA)	External Review by NRC	ENR
National Water Use Program	Internal/External Review by USGS Water Resources Research Committee	Hazards/ENR
Data Preservation and Standards	External Review by NRC	ENR
Earthquake Hazards Program	External Review by Scientific Earthquake Studies Advisory Committee	Hazards
National Cooperative Geologic Mapping Program	External Report to Congress	ENR
Biology Wildlife Program	External Peer Review	ENR
US Global Change Research Program	Committee on Hydrologic Science: Studies of Strategic Issues in Hydrology	ENR

Program Evaluations Scheduled for FY 2003 Completion	Scope and Methodology	Bureau Goal
Landslide Hazards Program	External Review from NRC	Hazards
Licensing Study for Geospatial and Remotely Sensed Data	External Review from NRC	Hazards/ENR
Remote Sensing Data Policies	External Review from NRC	Hazards/ENR
Beyond Mapping: New Geographic Information Science Challenges	External Review from NRC	ENR
National Cooperative Geologic Mapping Program	Internal/External Panel Federal Advisory Committee	ENR
Support for Thinking Spatially: The Incorporation of Geographic Information Across the K-12 Curriculum	External Review from NRC	ENR
Materials Flow of Natural Resources, Products, and Residuals	External Review from National Academy of Science	ENR

3.5 CAPITAL ASSETS/CAPITAL PROGRAMMING

Facilities

It is USGS policy to exercise responsible stewardship of its infrastructure. Adequate facility, equipment and installation assets are key to the successful performance of the USGS mission. The USGS has 36 owned installations, totaling approximately 2,100 acres. These installations range from major Science Centers with complex facilities such as laboratories and chemical storage buildings to smaller facilities such as research stations, geomagnetic and seismological observatories, and warehouses. Existing assets must be maintained properly and effectively. USGS has prepared a capital asset plan for a facility maintenance management system that will provide the USGS with the tools to improve the management of operations and maintenance. This effort is consistent with the FY 2001 Conference Report (106-914) for Interior and Related Agencies, which establishes direction to pursue a Department-wide effort to standardize the development and use of consistent facilities management and condition assessment systems. The USGS will implement MAXIMO™ as the standard Bureau facility maintenance management system at its 13 largest owned installations, i.e., those with annual facility operations and maintenance budgets exceeding $200,000. Installations below this threshold are typically unmanned observatories and field stations. Implementation will begin in FY 2002 at three sites, and at five additional installations in both FY 2003 and FY 2004. Both Bureau strategic and annual goals will be positively affected by an efficient, effective maintenance management system that will enhance our stewardship of USGS infrastructure.

Information Technology Planning Process

In 2001 USGS issued a contract for the "Development of an Operational Plan for Aligning the Capital Planning Process within the U.S. Geological Survey." The purpose of the contract was two-fold; the first part aided USGS in the development of effective Capital Asset Plans (300s) for three steady state or augmented information systems; Enterprise Web, National Biological Information Infrastructure, and Accessible Data Transfer, and for three new capital projects; Enterprise GIS, National Water Information System (NWIS Web), and BASIS+. The second part provided the USGS with a recommended process for incorporating the requirements of Capital Planning into everyday planning for the organization.

3.6 USE OF NON-FEDERAL PARTIES IN PREPARING THIS PLAN

The Annual Plan was prepared in conformance with OMB Circular A-11. The USGS did not engage non-Federal parties in preparing the Annual Performance Plan.

3.7 WAIVERS FOR MANAGERIAL ACCOUNTABILITY AND FLEXIBILITY

The USGS is requesting no waivers of administrative procedural requirements and controls.

Appendices

Appendix I

FY 2001 Annual Performance Report At-a-Glance

USGS GPRA PROGRAM ACTIVITIES	Long-Term Goals	Annual Goal
Hazards Provide science for a changing world focusing efforts in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.	Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.	Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 500 (to 5,374) the quarterly average number of streamgages delivering real-time data on the Internet, and increasing by 128 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.
Environment and Natural Resources Provide science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national and global scales and enhance predictive/fore-cast modeling capabilities.	Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.	Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision-making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting two large data infrastructures managed in partnership with others; delivering 1,146 new systematic analyses and investigations to our customers; improving and developing seven new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 external grants and contracts.

* For Discussion of Customer Satisfaction Measures, see Section 3.1

Performance Measure	2001 Target	2001 Actual	Comments
Hazards monitoring networks maintained	6	6	
Risk assessments delivered	8	26	
Real-time streamgages on the internet (quarterly average)	5,374	5,280	
Real-time earthquake sensors (cumulative)	329	329	
Stakeholder Meetings	32	27	
Customer Satisfaction	Baseline Hazards	Not Met	Baseline Hazards in 2002
Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported	46	46	
New systematic analyses and investigations delivered to customers	1,146	1,018	
Decision support systems or predictive models developed or improved and delivered to customers	7	7	
University-based partnerships for natural systems analysis	209	239	
Stakeholder meetings	458	592	
Customer Satisfaction	Baseline Environment and Natural Resources	95%	

Appendix II

FY 2002 Annual Performance Plan At-a-Glance

USGS GPRA PROGRAM ACTIVITIES	Long-Term Goals	Annual Goal
Hazards Provide science for a changing world focusing efforts in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.	Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.	Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the number of streamgages to 5,574, and increasing by 120 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.
Environment and Natural Resources Provide science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national and global scales and enhance predictive/fore-cast modeling capabilities.	Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.	Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision-making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 45 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 1,008 new systematic analyses and investigations to our customers; improving and developing 7 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 external grants and contracts.

* For Discussion of Customer Satisfaction Measures, see Section 3.1

Performance Measure	2002 Target	2002 Actual	Comments
Hazards monitoring networks maintained	6		
Risk assessments delivered	17		
Real-time streamgages on the internet (quarterly average)	5,574		Targets were increased from Pres. Req.
Real-time earthquake sensors (cumulative)	449		
Stakeholder Meetings	23		
Customer Satisfaction	Baseline Hazards		See Section 3.1
Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported	47		Target increased with restored funding
New systematic analyses and investigations delivered to customers	1,008		
Decision support systems or predictive models developed or improved and delivered to customers	7		Target increased with restored funding
University-based partnerships for natural systems analysis	209		Target increased with restored funding
Stakeholder meetings	529		
Customer Satisfaction	90%		See Section 3.1

Appendix III

FY 2002 Revised Final Budget Table

Budget Activity/Subactivity ($000)	FY 2001 Enacted Approp less rescission			FY 2002 Request			FY 2002 Enacted Approp.		
	Total	Hazards	Env. & Nat. Res.	Total	Hazards	Env. & Nat. Res.	Total	Hazards	Env. & Nat. Res.
National Mapping Program*	130,426	1,577	128,849	123,668	1,399	122,269	133,277	1,300	131,977
Mapping Data Collection and Integration	56,434	200	56,234	54,172	0	54,172	60,172	0	60,172
Earth Science Info Management and Delivery	37,329	0	37,329	33,382	0	33,382	36,182	0	36,182
Geog Research and Applications	36,663	1,377	35,286	36,114	1,399	34,715	36,923	1,300	35,623
Geologic Hazards, Resources, and Processes*	225,321	90,302	135,019	213,803	90,655	123,148	232,810	94,078	138,732
Geologic Hazard Assessments	72,726	72,726	0	73,704	73,704	0	75,004	75,004	0
Geologic Landscape and Coastal Assessments	74,375	17,576	56,799	64,240	16,951	47,289	77,973	19,074	58,899
Geologic Resource Assessments	78,220	0	78,220	75,859	0	75,859	79,833	0	79,833
Water Resources Investigations*	201,716	23,702	178,014	159,483	18,713	140,770	205,826	24,180	181,646
Water Resources Assessment and Research	94,840	0	94,840	65,123	0	65,123	96,723	0	96,723
Water Data Collection and Management	38,680	12,818	25,862	30,042	7,829	22,123	38,785	13,028	25,757
Cooperative Water Program	62,741	10,884	51,857	64,318	10,884	53,434	64,318	11,152	53,166
Water Resources Research Act Program	5,455	0	5,455	0	0	0	6,000	0	6,000
Biological Research*	160,569	0	160,569	149,262	0	149,262	166,389	0	166,389
Biological Research and Monitoring	128,788	0	128,788	126,860	0	126,860	133,502	0	133,502
Bio Info Management and Delivery	17,704	0	17,704	8,432	0	8,432	18,917	0	18,917
Cooperative Research Units	14,077	0	14,077	13,970	0	13,970	13,970	0	13,970
Programmatic Total	718,032	115,581	602,451	646,216	110,767	535,449	738,302	119,558	618,744
General Administration/Science Support* (prorated)	73,733	11,797	61,936	81,266	13,815	67,451	86,255	13,800	72,455
Facilities* (prorated)	88,341	14,135	74,206	85,894	14,602	71,292	89,445	14,312	75,133
Appropriations Total (not including supplementals)	880,106	141,513	738,593	813,376	139,184	674,192	914,002	147,670	766,332

*Budget Activity

Budget Restructure Funding Breakout									
Budget Activity/Subactivity ($000)	FY 2001 Approp less rescission			FY 2002 President Request			FY 2002 Enacted Approp		
	Total	Hazards	Env & Nat. Res	Total	Hazards	Env & Nat. Res	Total	Hazards	Env & Nat. Res
Mapping, Remote Sensing, & Geographic Investigations*	130,426	1,377	129,049	123,668	1,399	122,269	133,277	1,300	131,977
Cooperative Topographic Mapping	81,481	0	81,481	80,117	0	80,117	81,067	0	81,067
Land Remote Sensing	32,537	0	32,537	28,003	0	28,003	35,849	0	35,849
Geographic Analysis & Monitoring	16,408	1,377	15,031	15,548	1,399	14,149	16,361	1,300	15,061
Water Resources Investigations*	201,716	23,702	178,014	159,483	18,713	140,770	205,826	24,180	181,646
Hydrologic Monitoring, Assessments, and Research	133,520	12,818	120,702	95,165	7,829	87,336	135,508	13,028	122,480
Cooperative Water Program	62,741	10,884	51,857	64,318	10,884	53,434	64,318	11,152	53,166
Water Resources Research Act Program	5,455	0	5,455	0	0	0	6,000	0	6,000

*Budget Activity

Appendix IV

FY 1998 GPRA Baseline Documentation
Hazards

Provide science for a changing world focusing efforts in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.

Performance Measures:

6 Hazards monitoring networks maintained

• **1 flood hazards network** (the national streamgaging network) was comprised of about 6,900 stations. These stations are funded by the Hydrologic Networks & Analysis Program and the Fed-State Coop Water Program. Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in whole by reimbursements from other Federal agencies. The total number of streamgaging stations referenced here also includes streamgaging stations, which contribute to the Environment and Natural Resources annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources.

• **1 volcano hazards network** monitors 42 U.S. volcanoes in 5 volcanic regions. Funded by the Volcano Hazards Program.

• **1 earthquake hazards network** comprises one Global Seismographic Network (81 stations located worldwide in FY 1998), a National Seismic Network, and seventeen regional networks - together these networks provide an integrated means of monitoring, analyzing, and reporting on seismic activity in the United States. Funded by the Earthquake Hazards Program and the Global Seismographic Network Program.

• **1 geomagnetic hazards network** comprises 13 geomagnetic observatories to monitor changes in the earth's magnetic field and to issue warnings regarding the onset and severity of geomagnetic storms. Funded by the Geomagnetism component of the Earthquake Hazards Program.

• **1 landslide hazards network** currently monitoring 3 landslides in Colorado, California, and Washington State. Funded by the Landslide Hazards Program.

• **1 integrated hazards monitoring network** comprises a Hazards Support System and a Center for Integration of Natural Disaster Information, using national classified assets in conjunction with other sources, to monitor natural events, which place citizens and property at risk. Funded by the Earth Science Information Management and Delivery and the Geographic Research and Applications Programs.

16 Risk Assessments Delivered

• **5 studies related to the assessment of risks from flood hazards** were completed by USGS in FY 1998. Includes regional (State) flood frequency analyses nationwide to enhance the use of hazards assessments by decision-makers; there are 50 assessments total, one for each State. Also includes studies to analyze the effects of stream scour on highway bridges and stream banks. All these studies are funded by the Fed-State Coop Water Program.

• **4 volcano risk assessments** per year regarding potential hazards at individual volcano centers. In FY 1998, hazard assessments have been prepared for 21 U.S. volcanoes. Funded by the Volcano Hazards Program.

• **6 coastal risk assessments**, part of a series of regional assessments for the purpose of understanding the processes impacting coastal risk due to erosion, earthquakes, tsunamis and landslides. In 1997, the program had such assessments underway involving about 5% of the coast of the Conterminous U.S. and Great Lakes. 4 regional assessments are scheduled for completion and delivery to customers in each fiscal year. Funded by the Coastal and Marine Geology Program.

• **1 landslide risk assessment** periodic update of a national landslide susceptibility database. Funded by the Landslide Hazards Program.

Performance Measures (continued):

4,571 Real-time streamgages — 104 streamgages were instrumented with telemetry to provide real-time flow information for National Weather Service river forecasters and emergency management and response officials. Funded by the Hydrologic Networks & Analysis Program. [Note: this metric was discontinued in FY 2000 and replaced]

100 Real-time earthquake sensors — 20 ground motion detectors per year are purchased and installed to serve as the initial instrument for use in pursuing the real-time capture and transmission of information regarding earthquakes. Funded by the Earthquake Hazards Program.

16 Stakeholder meetings

- **6 flood hazard meetings** coordinated by the Office of Surface Water with other Federal agencies who play a major role in hazard warning and response. Meetings occur at least once per year; involve customers, cooperators, Administration and Congressional oversight groups, and/or the public, collectively or separately; and are used to enhance or improve the strategic direction and the management of the program. Three annual meetings with National Weather Service, 1 with U.S. Army Corps of Engineers, and 2 with ACWI Streamgaging Task Force.
- **2 volcano hazard stakeholder meetings**
- **1 earthquake hazard stakeholder meeting**
- **5 coastal hazard stakeholder meetings**
- **2 integrated hazards monitoring stakeholder meetings**
  USGS/NIMA Strategic Partnership Meetings - 2

Environment and Natural Resources

Provide science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national and global scales and enhance predictive/fore-cast modeling capabilities.

Performance Measures:

40 Long-term data collection and data management efforts maintained & improved and large data infrastructures supported

• 2 large-scale infrastructures:
National Spatial Data Infrastructure - 65 FGDC-compliant clearinghouse server nodes
National Biological Information Infrastructure

• 8 long-term geospatial databases:
National Hydrographic Dataset - 2,149 cataloging units
National Elevation Dataset - >53,400 digital elevation models
National Digital Ortho-Imagery - >86,000 ortho-images
National Topographic Map Series - ~61,862 primary-series topographic maps
National Land Cover Characterization Dataset - 149 Landsat Thematic Mapper path/row scenes
National Aerial Photography Program - >1,400,000 aerial photographs
National Geographic Names Database - 50 States, District of Columbia, 3 territories, 2 commonwealths, 3 freely associated areas, 2 uninhabited insular areas, and Antarctica
National Satellite Land Remote Sensing Data Archive - 140,995 gigabytes and 2,162,442 scenes of satellite imagery

• 4 long-term hydrologic data collection and data management efforts:
National streamgaging network,
National network of ground-water monitoring wells,
Water quality monitoring instrumentation at streamgages & wells (includes NASQAN, Benchmark, and NAWQA low-level sampling sites), and National Trends Network for precipitation monitoring. Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in whole by reimbursements from other Federal agencies. The streamgaging stations (surface-water monitoring sites) referenced here also include streamgaging stations, which contribute to the Hazards annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources

• 7 long-term biological data collection and data management efforts:
Bird Banding Laboratory coordination of national bird banding
Breeding Bird Survey national population monitoring of birds
Fish population monitoring in Great Lakes and Atlantic and Pacific coasts
Non-indigenous aquatic species database
Biomonitoring of Environmental Status and Trends Program (BEST)
Amphibian monitoring program (includes calling surveys and atlases and web-based North American Reporting Center for Amphibian Malformations)
Wildlife Disease Epidemiology

• 3 long-term global change data collection and data management efforts

• 10 long-term coastal and marine geology data collection and data management efforts

• 1 long-term geologic map information data management effort:
National Geologic Map Database FY 1998 baseline, metadata for 45% of all USGS geologic maps and 1% of State Survey geologic maps are accessible via the Internet.

• 5 mineral resources national databases:
National Geophysical Database,
National Geochemical Database,
Mineral Resources Data System,
Minerals Availability System/Minerals Inventory Locator System, and
Automated Minerals Information System

865 New systematic analyses & investigations delivered to customers

• **426 Water Resources Investigations** products delivered to managers or the scientific community that result from long-term assessments or from investigations to determine causes and/or effects of environmental change. Reports and other products are delivered as paper copies or Internet products.
112 National Water Quality Assessment (NAWQA) Program
70 Toxic Substance Hydrology (includes products resulting from collaboration with the National Research Program)
3 Ground-Water Resources
100 Hydrologic Research & Development (includes some products from the National Research Program, which receives funding from other water resources programs and collaborates on publications and projects with those programs)
141 Fed-State Coop Water Program

• **412 biological research investigations**
28 Contaminants
77 Fisheries and Aquatic Resources
67 Wildlife
107 Ecosystems
34 Invasive Species
65 Endangered and At Risk Species
34 Biological Information Management and Delivery

• **2 energy resource investigations** as part of a series of periodic assessments on the location, quantity, and quality of known and undiscovered resources from eight regions of the Nation and eight regions of the world

• **3 global change investigations**
carbon sequestration in lake, reservoirs and peatlands,
glaciers of South America,
climate and vegetation change in Western U.S.

• **7 National Cooperative Geologic Mapping investigations**

• **6 regional assessments for coastal and marine natural resources and coastal and offshore environmental issues**
(sediment hosted pollutants, coral reefs, benthic habitats, marine sanctuaries, as well as energy, mineral and coastal aquifer resources).

• **5 mineral resources research investigations and assessments** on the occurrence, quality, quantity, uses, and environmental characteristics of mineral resources, fundamental processes that create them, and the life cycle of minerals and mineral materials. Prior to FY 1998, 20 resource or environmental studies were completed.

• **4 integrated ecosystem analyses:**
Chesapeake groundwater reports and analysis,
Conowingo Reservoir,
San Francisco Bay hydrodynamics,
Water quality database web page

5 Decision support systems or predictive models developed or improved and delivered to customers

• **1 National Mapping Program decision support system** - Famine Early Warning System

•**1 new or improved hydrologic model** (2 currently available - Modular Modeling System and MODFLOW)
1 major model improvement in FY 1998 - an easy-to-use graphical user interface (GUI) was set up for MODFLOW, a three-dimensional ground-water flow model. The GUI enables users to run realistic ground-water simulations, providing immediate visualization of simulation results and giving water managers a better understanding of what the data mean.

• **0 new or improved biological decision support system or predictive model** (7 currently available Florida - Across Trophic Level System Simulation [ATLSS] model; Waterfowl recruitment model; Instream flow models; Upper Mississippi River corridor decision support system; Wetlands expert system [includes Moist Soil Management Advisor and Avian Botulism Risk Assessment Model]; Migratory bird continental population modeling; Regional Hydro-Ecological Simulation System [Glacier NP])

• **1 new or improved geological decision support system or predictive model**
energy resource decision support system

• **2 new or improved integrated ecosystem decision support systems**
Chesapeake Spatially referenced regressions on watershed attributes model (regional interpretation of water quality monitoring data); Florida website

270 University-based partnerships for natural system analysis

• **55 grants are awarded annually to 54 State Water Resources Research Institutes** (the Institute in Guam receives 2 grants because it also serves the Federated States of Micronesia).

• **215 biological research work orders** (coop units)

212 Stakeholder meetings

• **24 National Mapping Program stakeholder meetings**
National States Geographic Information Council
Annual Cooperator Program Workshop (Central/Eastern Region)
National Cooperator Program Workshops (ASPRS, ACSM conferences) - 2
NMD National Mapping Managers Conference
USGS/USFS Single-Edition Steering Committee - 2
National Digital Orthophoto Steering Committee - 3
National Satellite Land Remote Sensing Data Archive Advisory Committee – 2
National Atlas Federal Steering Committee
NASA/NOAA/USGS Landsat 7 Program Management Review
NASA/USGS Partnership Roundtable Review
Inventory Management/IG Review
International Map Trade Association Business Partner Program Review
Land Processes Distributed Active Archive Center Advisory Committee - 2
FGDC Subcommittee on Base Cartographic Data
Interior Geographic Data Committee
United Nations Environment Programme/Global Resources Information Database Advisory - 2
DOI High-Priority Digital Base Data Program Steering Committee

• **24 Geologic Hazards, Resources, and Processes stakeholder meetings**
16 energy resource meetings
1 global change
1 annual meeting of the Advisory Committee chartered by the National Cooperative Geologic Mapping Act
5 coastal & marine environment
1 mineral resources stakeholder meeting

• **8 integrated ecosystem stakeholder meetings:**
Chesapeake Liaison Committee/Client meetings
Florida Bay Science Symposium
Mercury Workshop
Paleo workshop
Mojave Client meeting
San Francisco Bay - monitoring program design meetings
Platte R. Symposium
Greater Yellowstone Area Grand Teton Workshop

212 Stakeholder meetings (continued)

• **87 Water Resources Investigations stakeholder meetings** including one meeting per program for Ground-Water Resources, Toxic Substances Hydrology, and Hydrologic Research & Development, and 2 meetings for Water Information Delivery (5 meetings total). One meeting per State for Fed-State Coop Water Program (50 meetings total). 32 meetings for NAWQA Program (includes one meeting per year for each study unit in the high intensity phase of the study cycle).

• **69 Biological Research stakeholder meetings**

National:
38 Coop. Research Unit Management Meetings
2 Program Reviews
1 Theme/Issue workshops
1 National Bureau Information Needs

Regional:
5 Regional Bureau Information Needs Meetings
16 Research Center Partner Coordination Meetings
2 Individual Bureau Coordination Meetings (National Park Service, Minerals Management Service)
2 Research Center Reviews
2 Theme/Issue Workshop

FOR FURTHER INFORMATION, CONTACT:
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